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THE THERAPEUTIC USE OF OXYGEN *

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The use of oxygen in medical therapy occupies at present an uncertain rôle. Previous to the recent war, the current attitude was that of indifference to its use and skepticism concerning its value. This attitude appeared to be based not on inaccurate observation, but for the most part on the true appraisal of results obtained from ineffective methods. The lack of enthusiasm with which oxygen has been regarded in the past seems largely due to the absence of an ideal method of administering it. There is no commonly available method that can supply to the patient an effective concentration of oxygen without in some degree interfering with his comfort. The apparatus most widely used in this country and in England, the tube and funnel, adds less than 2 per cent. oxygen to the inspired air.[1] In short, oxygen was not given in sufficient dosage to get the therapeutic effect. During the war its effective administration in cases of gas poisoning produced such remarkably good results as to offer a stimulus for a renewed investigation of oxygen therapy in clinical disease, as a result of which it is now possible to show that oxygen can be effectively administered with slight or temporary discomfort and with the production of unmistakable improvement in the patient. The purposes of this paper are: (1) through the recent evidence to establish a rational basis for oxygen therapy, (2) to discuss the essential indications for its employment, and (3) to consider briefly the method of administration.

I shall first note the results obtained in the treatment of gas poisoning. When the Haldane apparatus could be used in the acute cases at the front, it was frequently life-saving.[2] In the treatment of the chronic cases by oxygen chambers in England, remarkable results were obtained by Barcroft [3] at Cambridge and by Shufflebotham and Sowry [4] at Stokes. The gassed soldiers were relieved of palpitation, disordered action of the heart, insomnia, cough, expectoration and mental depression. They showed in many cases a disappearance of polycythemia, and an improvement in their previously poor cardiac and respiratory responses to effort. These results constitute an instance in which effective treatment with oxygen accomplished definite improvement and cure. Shufflebotham and Sowry treated more than 100 patients in their oxygen chamber, including several patients with pneumonia and pernicious anemia. The pneumonia patients showed an improvement, but in the cases of pernicious anemia a downward progress occurred after they left the chamber.

BASIS FOR RATIONAL USE OF OXYGEN

In discussing the laboratory evidence that forms the basis for the rational use of oxygen, I shall first consider the degree to which anoxemia, or an abnormal lack of oxygen in the body, occurs in clinical disease. The introduction of the arterial puncture by Hürter,[5] the development of convenient methods of blood gas analysis by Van Slyke [6] and by Haldane,[7] and the clinical investigation of Stadie,[8] Harrop [9] and Meakins [10] resulted in the establishment of normal standards of oxygen saturation of the arterial blood and in the demonstration quantitatively of the anoxemia present in pneumonia, cardiac insufficiency and emphysema. Means and Newburgh,[11] and Lundsgaard [12] had already studied the oxygen of the venous blood. In normal persons the arterial oxygen saturation is about 95 per cent.; in cardiac insufficiency and its complications it may be between 95 and 75 per cent.; in pneumonia, between 95 and 60 per cent. The normal venous saturation is between 65 and 75 per cent.; when a diminished blood flow is present, as in cardiac insufficiency, it may fall between 65 and 30 per cent., depending on the severity of the disturbance.

Since these figures demonstrate that a severe oxygen deprivation may occur in disease, it becomes desirable to know what the effects of such anoxemia are. Fortunately, physiologists have accumulated abundant data on this point. Mountain sickness is a familiar example in which the symptoms are due to oxygen want.[13] Headache, nausea and vomiting, irrational states, and

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2. Douglas, C. G.: Discussion on Therapeutic Uses of Oxygen, Proc. Roy. Soc. Med. (Sec. Therap. & Pharmacol.) **13**: 59, 1920.
3. Barcroft, J.; Hunt, G. H., and Dufton, D.: The Treatment of Chronic Cases of Gas Poisoning by Continuous Oxygen Administration in Chambers, Quart. J. Med. **13**: 179 (Jan.) 1920.
4. Shufflebotham, F., and Sowry, G. H.: Discussion on Therapeutic Uses of Oxygen, Proc. Roy. Soc. Med. (Sec. Therap. & Pharmacol.) **13**: 59, 1920.
5. Hürter: Deutsch. Arch. f. klin. Med. **108**: 1, 1912.
6. Van Slyke, D. D.: Gasometric Determination of the Oxygen and Hemoglobin of Blood, J. Biol. Chem. **33**: 127 (Jan.) 1918.
7. Haldane, J. S.: New Apparatus for Accurate Blood Gas Analysis, J. Path. & Bacteriol. **23**: 443 (Dec.) 1920.
8. Stadie, W. C.: The Oxygen of the Arterial and Venous Blood in Pneumonia and Its Relation to Cyanosis, J. Exper. Med. **30**: 215 (Sept.) 1919.
9. Harrop, G. A.: The Oxygen and Carbon Dioxide Content of Arterial and Venous Blood in Normal Individuals and in Patients with Anemia and Heart Disease, J. Exper. Med. **30**: 241 (Sept.) 1919.
10. Meakins, J. C.: Observations on the Gases in Human Arterial Blood in Certain Pathological Pulmonary Conditions and Their Treatment with Oxygen, J. Path. & Bacteriol. **24**: 87, 1921.
11. Means, J. H., and Newburgh, L. H.: Studies on the Blood Flow by the Method of Krogh and Lindhard, Tr. A. Am. Phys., 1915, p. 51.
12. Lundsgaard, C.: Studies of Oxygen in the Venous Blood, J. Exper. Med. **27**: 179 (Feb.) 1918.
13. Haldane, J. S.: Recent Developments in the Therapeutical Use of Oxygen, Contributions to Medical and Biological Research, Dedicated to Sir William Osler **1**: 550, 1919.

mental depression are common symptoms. In carbon monoxid poisoning in which there is often a more abrupt and severe want of oxygen, the patients are usually comatose and have a rapid, feeble pulse, and shallow, rapid respiration. In these patients the anoxemia may have been so severe as to leave permanent damage to the central nervous system. A patient so exposed may in a half hour of vigorous oxygen and carbon dioxid therapy become completely rid of carbon monoxid and have all the hemoglobin fully saturated with oxygen.[13] Nevertheless, he may die one or two days later because of the damage the previous anoxemia created in his central nervous system.[14] This explains why delay in the treatment of a marked anoxemia may result in irreparable injury. In experiments in which a lowered partial pressure of oxygen is breathed in chambers, the results are more easily controlled. Haldane,[15] when exposed to a low pressure of oxygen, became irrational and possessed of a fixed delusion. In summary, it might be said that the disturbance of the gastro-intestinal system is manifested by nausea, vomiting and diarrhea; the respiratory system by increased rate and depth of respiration or by periodic respiration, and later by rapid, shallow respiration; the circulatory system by a constant and progressive increase in pulse rate, and in the end by a fall in diastolic pressure [16] and cardiac failure; the central nervous system by headache, visual disturbances, irrational states and delirium, and finally, coma and death.

A crucial experiment of Barcroft [17] may be cited, since it links up the experimental with the clinical data. He lived for five days in a chamber in which the pressure of oxygen was lowered until his oxygen saturation at rest was 88 per cent. He then experienced the effects of mild anoxemia. His pulse rose from 56 to 86, he was nauseated, racked with headache, and suffered from visual disturbances and vertigo. He became faint on exertion. The arterial saturation of patients with pneumonia frequently falls much lower than that present in Barcroft, thus demonstrating that the ill effects of anoxemia must be an actual accompaniment of clinical disease.

These effects, then, are the result of lack of oxygen, and it is with their prevention or relief by appropriate oxygen treatment that we are now concerned. By application of the methods of gas analysis to blood, and particularly by the successful development of the arterial puncture by Stadie, it was possible to compare the amount of oxygen in the blood before and after treatment with the symptomatic effect. Meakins [18] used the Haldane apparatus in cases of pneumonia, emphysema and bronchitis, and showed that marked improvement in the clinical condition of the patient occurred as the arterial saturation was elevated to the normal. Stadie [19] placed pneumonia patients in a chamber containing between 40 and 60 per cent. of oxygen, and noted that with the removal or decrease in the arterial anoxemia, a decided improvement in the patient took place. Barach and Woodwell [20] used a mouthpiece rebreathing method in the treatment of patients with pneumonia and cardiac insufficiency, and made observations on the oxygen and carbon dioxid contents of both arterial and venous blood. In the cases of pneumonia, the arterial oxygen saturation was either elevated to the normal or much increased. In most of the severe cases, definite clinical improvement could be seen. When edema of the lungs occurred as a complication, the prolonged use of oxygen seemed to avert a fatal outcome.

In cardiac insufficiency, when an arterial anoxemia was present due to passive congestion or edema in the lungs, the inhalation of oxygen raised the arterial saturation to the normal. When acute bronchitis or acute pulmonary edema supervened, the resultant arterial anoxemia could either be entirely removed or much diminished. The improvement in the arterial blood could not always be determined by the degree of cyanosis, as at times progressive heart failure occurred and the stagnant anoxemia masked the improved oxygen saturation of the arterial blood. Obviously, the degree of cyanosis cannot always be used with safety to represent the arterial anoxemia. The venous saturation is needed to give the full picture. Clinical improvement could be seen in the treatment of the acute complications but not in the chronic cardiac condition itself.

The venous saturation in the cases both of pneumonia and of cardiac insufficiency showed an increase that was generally dependent on the increase of the arterial saturation, and merely raised the level at which the oxygen exchange took place. In a few cases there was a slight additional increase that may be explained on the basis of an improved blood flow or on the transfer of physically dissolved oxygen to the hemoglobin as the blood passes from artery to vein. When the patient is breathing a high concentration of oxygen, there may be an excess of oxygen in physical solution amounting to 1 or 2 per cent. by volume, the hemoglobin being fully saturated. As the hemoglobin passes through the capillaries it becomes unsaturated, and it is then possible for the excess oxygen physically dissolved to unite with the hemoglobin and gradually increase its saturation. When the circulation was progressively failing, the venous saturation could not be increased independently of the arterial saturation.

The venous saturation is thus unreliable as a criterion of oxygen therapy, since it varies with the blood flow. It is the oxygen saturation of the arterial blood that is especially significant because it represents the diffusion pressure at which oxygen is available to the tissues. Barcroft [21] has had calculated the relative amounts of oxygen which would leave the blood to enter the tissues under the three circumstances in which anoxemia exists: (1) the anoxic or arterial; (2) the stagnant or venous, and (3) the anemic. In each case it is assumed that the amount of oxygen going to the tissues in cubic centimeters for each 100 c.c. of blood is the same. In the accompanying table, quoted from Barcroft, it is seen that the arterial anoxemia furnished by far the least oxygen to the tissues, and is thus the most dangerous to the patient.

14. Henderson, Yandell: Personal communication to the author. Haggard, H. W., and Henderson, Yandell: The Treatment of Carbon Monoxid Poisoning, J. A. M. A. **77**: 1065 (Oct. 1) 1921.

15. Haldane, J. S.; Kellas, D. M., and Kennaway, E. L.: Experiments on Acclimatization to Reduced Atmospheric Pressure, J. Physiol. **52**: 181 (Dec.) 1919.

16. Lutz, B. R., and Schneider, E. C.: Circulatory Responses to Low Oxygen Tension, Am. J. Physiol. **50**: 327, 1921.

17. Barcroft, J.; Cook, A.; Hartridge, H.; Parsons, T. R., and Parsons, W.: Flow of Oxygen Through the Pulmonary Epithelium, J. Physiol. **53**: 450 (May) 1920. Barcroft, J.: Anoxemia, Lancet **2**: 485 (Sept. 9) 1920.

18. Meakins, J. C.: Therapeutic Value of Oxygen in Pulmonary Lesions, Brit. M. J. **1**: 224 (March 6) 1920; (Footnote 10).

19. Stadie, W. C.: The Treatment of Anoxemia in Pneumonia in an Oxygen Chamber, J. Exper. Med. **35**: 337 (March) 1922.

20. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy, I, In Cardiac Insufficiency and Related Conditions, Arch. Int. Med. **28**: 367 (Oct.) 1921; II, In Pneumonia and Its Complications, ibid. **28**: 394 (Oct.) 1921.

21. Barcroft, J.: Footnote 17, second reference.

In summary of the discussion up to this point, it might be stated that the consequences of anoxemia may be serious and harmful, that they exist in clinical disease, and that to a large extent they can be prevented or overcome by appropriate oxygen treatment. It is on this basis that I believe the use of oxygen has a justifiable rôle in medical therapy.

INDICATIONS FOR EMPLOYMENT OF OXYGEN

We come now to the question as to when oxygen should be used. The essential indication for its employment seems to be acute anoxemia. The onset of abrupt want of oxygen indicates prompt treatment to avert the grave effects of severe anoxemia outlined in the beginning of this paper. Chronic anoxemia may, indeed, have ill effects; but its occurrence over long periods of time in patients with congenital or acquired heart disease and in persons who have become acclimatized to high altitudes indicates that no very serious damage is produced.

In the recent Anglo-American expedition to the Andes, all of the party felt poorly when they arrived at the high altitudes, and half of their number were confined to bed with symptoms of acute anoxemia.[22] After a time they were able to do their investigative work,

OXYGEN FURNISHED TO THE TISSUES NORMALLY AND IN ANOXEMIA

	Oxygen in Blood Going to Vessels of Tissue Per Cent.	Oxygen Leaving the Blood to Supply the Tissue Per Cent.
Normal*	100	100
Anoxemia:		
Anoxic	66	42
Anemic	66	66
Stagnant	66	75

* The figure 100 at the top of each column is merely a standard with which to compare the figures beneath it.

although more than half of them continued to have symptoms throughout their stay. The natives were also cyanotic, but none had the symptoms of mountain sickness, their condition being that of chronic anoxemia. However, when any one contracted pneumonia, white man or native, it meant practically certain death, unless he could be immediately rushed to the sea level. It is thus apparent that although a chronic anoxemia may be present without symptoms, an acute anoxemia causes definite and perhaps grave injury.

Acute oxygen want occurs in a variety of conditions, among which may be listed pneumonia, acute cardiac failure, severe hemorrhage, epidemic (lethargic) encephalitis, ascent to high altitudes, the complications of chronic cardiac insufficiency, pulmonary edema, acute bronchitis, carbon monoxid poisoning and nitrous oxid and other anesthesia. In acute carbon monoxid poisoning, Yandell Henderson [14] found that the symptoms made a swift disappearance when a mixture of oxygen and 5 per cent. carbon dioxid was inhaled. The hyperpnea caused by the carbon dioxid results in a quicker elimination of carbon monoxid and a quicker absorption of oxygen. As in this condition the acute anoxemia may be profoundly dangerous, anything which hastens the return to a normal oxygen content of the blood would appear to be eminently justified. Favorable results from carbon dioxid therapy after anesthesia and operation are also described by Henderson.[23] The beneficial effects seem to depend on the "augmentation of breathing which rapidly ventilates the anesthetic out of the blood." The circulation is stimulated, increasing the venous return to the heart and raising the arterial pressure. There is, in addition, a marked decrease of postoperative nausea, vomiting and thirst. Five per cent. carbon dioxid has apparently not been harmful when judiciously used. Caution must be exercised, however, in its administration, as larger concentrations may be dangerous. Severe hemorrhage is attended by acute anoxemia of such an extent as sometimes to be the cause of death. Oxygen therapy may in these cases tide the patient over until transfusions can be given.[24] In acute cardiac failure and in the acute complications of cardiac insufficiency, the use of oxygen may be of help.

The disease in which acute anoxemia occurs with the greatest frequency and with the greatest severity is pneumonia, and it is here, therefore, that oxygen therapy is most urgently indicated. The use of oxygen can be expected to remove or to diminish the ill effects of acute anoxemia, and in that way to improve the patient's chances of recovery and at times directly avert death. The clinical guide to its use is the presence of cyanosis. In pneumonia, cyanosis has been said to run parallel to the degree of arterial anoxemia.[19] It should be borne in mind, however, that this applies only to patients without anemia. Since the cyanotic color varies with the amount of reduced hemoglobin, a patient with a low hemoglobin may show little or no cyanosis even in the presence of marked arterial anoxemia. As intimated above, the parallelism between the arterial anoxemia and the degree of cyanosis rests on the assumption that stagnant anoxemia is absent. This is generally true as the blood flow in pneumonia, estimated by relative changes in blood gases, appears to be either normal or increased.[25] Occasionally a failing circulation does occur with the production of cyanosis of venous rather than arterial origin. It may be stated as a general principle that cyanosis in pneumonia indicates the use of oxygen therapy until it has been removed, or, if that is not possible, until it has been diminished.

The duration and frequency of administration are problems dependent on the individual patient and the resources at hand. It would seem theoretically desirable to keep the patient free from cyanosis as many hours of the twenty-four as possible. In the very severe cases it may be necessary to give oxygen continuously. In the less severe cases benefit may be derived from oxygen administered at frequently repeated intervals.[26] The signs which should be kept track of and which usually reflect improvement are: (1) the degree of cyanosis; (2) the pulse rate, and (3) the mental condition of the patient.

22. Harrop, G. A.: Personal communication to the author.

23. Henderson, Yandell; Haggard, H. W., and Coburn, R. C.: The Therapeutic Use of Carbon Dioxid After Anesthesia and Operation, J. A. M. A. **74**: 783 (March 20) 1920.

24. Discussion on Therapeutic Uses of Oxygen, Proc. Roy. Soc. Med. (Soc. Therap. & Pharmacol.) **13**: 59, 1920. Henderson, Yandell, and Haggard, H. W., with the collaboration of Beatty, H. H.; Brooks, R. W.; Detwiler, S. R.; Ellerbeck, G. C.; Kohle, H.; Robb, H. B., and Taliaferro, W. H.: Hemorrhage as a Form of Asphyxia, J. A. M. A. **78**: 730 (March 11) 1922.

25. Stadie (Footnote 8). Barach and Woodwell (Footnote 20).

26. Haldane (Brit. M. J. **1**: 181 [Feb. 10] 1917) has observed: "It may be argued that such measures as the administration of oxygen are at the best only palliative and of no real use, since they do not remove the cause of the pathological condition. As a physiologist, I cannot for a moment agree with this reasoning. The living body is no machine, but an organism constantly tending to maintain or revert to the normal, and the respite offered by such measures as the temporary administration of oxygen is not wasted but utilized for recuperation."

The degree of cyanosis is, with the exceptions noted above, the most trustworthy clinical guide in the oxygen treatment of pneumonia. Its alteration under treatment may in addition furnish information of prognostic value. Severe arterial anoxemia has been shown to be an unfavorable sign.[8] If the administration of oxygen fails to remove the anoxemia, or alleviates it only very slightly, the prognosis, in our limited experience, is distinctly worse. Some benefit, however, may be derived from the increase in the oxygen physically dissolved. In cases in which a severe cyanosis is cleared by prompt oxygen therapy, the prognosis is bettered in that the ill effects of anoxemia may diminish or disappear and the patient be thus put in better condition to cope with the specific toxins of the disease.

A careful record of the pulse before, during and after oxygen therapy adds further data on which to judge the effect of treatment. There is usually a distinct slowing in rate. In the severe cases this may be a very striking sign of improvement. In normal persons the inhalation of oxygen causes perceptible slowing of the heart,[27] but in patients suffering from anoxemia the decreased rate is usually of much greater extent.[28] The reason for this presumably is that anoxemia is itself the cause of rapid heart action. In contrast to the action on the circulation, the respiratory rate is only occasionally slowed and usually is unaffected. What happens to the tidal air in pneumonia as a result of the inhalation of oxygen is still uncertain. In the few observations of Beddard and Pembrey,[28] when failure of the right heart occurred, pulmonary ventilation was decreased by oxygen without altering the respiratory rate. In pneumonia unaccompanied by right heart failure or cyanosis, oxygen inhalation for two minutes had little or no effect. It is obvious that more investigation is needed in this field.

An additional effect that may result from the removal of anoxemia is a more alert and a clearer mental condition of the patient. The irrational states and delirium in pneumonia which may in part be due to the anoxemia, as they are producible experimentally by withdrawal of oxygen, do not, however, promptly disappear but seem to follow the clinical course of the disease. It may be that we are dealing here with the effects of long continued oxygen want, which, as intimated above, may persist even after their original cause has been removed.

Subjective dyspnea does not seem to be due to oxygen want, nor is it usually relieved by the inhalation of oxygen. Respiratory distress cannot therefore be taken as a criterion of the therapeutic effect, since as a rule it diminishes only gradually as the general condition improves. Oxygen therapy should be undertaken with the idea that acute anoxemia produces serious and at times grave injury, and not with the idea that the patient will at once be relieved of his respiratory distress and brought to a state of comfort.

The failure to relieve cyanosis represents the infrequent type of response to oxygen therapy. It is presumably due to the existence of a partially intact blood supply through consolidated pulmonary tissue. The fact that the majority of patients are relieved of arterial anoxemia during the inhalation of oxygen indicates that for the most part pulmonary consolidation is not the precise cause of cyanosis. The presence of edema in or adjacent to the hepatized area or in other parts of the lung appears to be the more important factor. This is more logically related to the ease of removal of anoxemia, since it is highly probable that high pressures of oxygen can diffuse through edema in the bronchioles or through edematous alveoli, whereas, because of the shape of the oxygen dissociation curve, it is hardly conceivable that increased oxygen pressures could make up for an unrespired blood flow through hepatized lung. Pulmonary consolidation, especially lobar, may at times be fairly extensive without the presence of cyanosis, indicating that the blood supply, except for the nutrient bronchial vessels, may be diverted from the area no longer ventilated. Hoover [29] found the cyanosis proportionate to the extent of consolidation, and observed that it was relieved by oxygen only when moisture was present in the lungs. Meakins [30] found no relation between the degree of anoxemia and the extent of consolidation, and concluded that rapid, shallow breathing was the cause of the anoxemia of lobar pneumonia. We have witnessed extreme shallow respiration result in arterial anoxemia in cases of epidemic encephalitis,[31] but it has seemed to us only an infrequent factor in the cause of the cyanosis of pneumonia. Pathologic evidence bearing on the question indicates that a certain amount of blood passes through the lung in red hepatization, but none in gray hepatization.[32] Cyanosis in pneumonia is thus dependent on the character and stage of the lesion rather than on the actual extent of lung involvement. The major cause appears to be the presence of edema, local or widespread, manifested in the parenchyma of the lung or in the bronchial tree, and susceptible of relief by increased pressures of oxygen. The minor cause is that of an unrespired blood flow through consolidated pulmonary tissue, and is insusceptible of relief by oxygen. Both conditions are more likely to be present in bronchopneumonia, and for that reason cyanosis is here more common and more severe than in lobar pneumonia. An occasional factor that may cause or augment the cyanosis is extreme shallowness of respiration.

We have been concerned with the general effect of the use of oxygen. The injection of oxygen into the peritoneal and pleural cavities or into draining wounds constitutes local individual problems beyond the scope of this paper.

METHOD OF ADMINISTRATION

The method of administration still remains a great problem in oxygen therapy. First of all, it is necessary to provide an effective concentration of oxygen in order to obtain good results. A mixture of air which contains between 40 and 60 per cent. of oxygen seems desirable. Less than 40 per cent. may not be effective, and more than 70 per cent. may be harmful.[33] The exact concentration theoretically required would

27. Smith, H. A.: The Effect of Oxygen Inhalation on the Pulse, Med. Rec. **1**: 481, 1871. Benedict, F. G., and Higgins, H. L.: Effects on Men at Rest of Breathing Oxygen-Rich Gas Mixtures, Am. J. Physiol. **28**: 1, 1916.

28. Beddard, G. P., and Pembrey, M. S.: Observations on Pulmonary Ventilation in Disease, Brit. M. J. **2**: 580, 1908.

29. Hoover, C. F.: Oxygen Therapy, J. A. M. A. **71**: 880 (Sept. 14) 1918.

30. Meakins, J. C.: Harmful Effects of Shallow Breathing, with Especial Reference to Pneumonia, Arch. Int. Med. **25**: 1 (Jan.) 1920.

31. Barach, A. L., and Woodwell, M. N.: Studies in Oxygen Therapy. III. In an Extreme Type of Shallow Breathing Occurring in Lethargic Encephalitis, Arch. Int. Med. **28**: 421 (Oct.) 1921.

32. Gross, L.: Reconstruction of the Circulation of the Liver, Placenta and Lung in Health and Disease, Canadian M. J. **9**: 632 (July) 1919.

33. Karsner, H. T.: The Pathological Effects of Atmospheres Rich in Oxygen, J. Exper. Med. **23**: 149 (Feb.) 1916. Flack, M., and Hill, L.: Textbook of Physiology, 1919, p. 303.

be that amount precisely needed to remove the anoxemia. Practically, however, there seems to be little need for precision at the present state of our knowledge. The second desirable feature of a good method is that it should produce no discomfort to the patient, or, if that is impossible, slight or temporary discomfort. Thirdly, when prolonged oxygen therapy is planned, the economy of the method has to be considered.

It may be said at the outset that the inhalation of oxygen is the most logical avenue of administration, since it utilizes the vast absorbing surface of the lungs. Other methods, such as the intravenous [34] or subcutaneous [35] or rectal administration, appear impracticable for prolonged therapy. Exceptions should be made in the case of infants, in whom the subcutaneous use of oxygen has apparently been successfully employed.[35]

The oxygen chamber is the ideal way to treat anoxemia from the standpoint of effectiveness and comfort, but it is obviously impracticable for widespread use. Modern methods of administration known to us that yield effective oxygen mixtures and that are available for common use are: the Haldane [36] apparatus involving the application of the face mask; the Meltzer [1] oral insufflation apparatus, in which a metal tongue depressor is held in the mouth to conduct oxygen; the oxygen tent of Hill,[37] which encloses the upper part of the patient in bed; a recent apparatus of Yandell Henderson,[38] a description of which has not as yet been published, which also utilizes a face mask, and the mouthpiece rebreathing apparatus which we have used.[39] These methods, we believe, all yield an effective concentration of oxygen, but vary in their ability to secure comfort for the patient, and in the economy of operation. It should be added that in infants the nasal catheter may become an effective method because of their small oxygen consumption. The oxygen that enters the lungs through the small catheter contributes in this case a considerable increase of oxygen, whereas in adults it adds relatively so little as to relieve only the rather mild cases of anoxemia. Henderson has added the rubber mouthpiece to his apparatus for patients who will not tolerate the mask. In this method provision is made for the inspiration of a mixture of air and oxygen in the following manner: An amount of oxygen less than the tidal air is run into the collecting bag. During inhalation the oxygen in the bag is exhausted, whereupon an inspiratory valve connected with the outside opens and admits air until the inspired volume is made up. The exhaled air and oxygen are passed out through an expiratory valve. This method would, on the whole, appear to be very satisfactory, although we have not as yet had the opportunity of testing it.

In our apparatus, rebreathing of oxygen was instituted to prevent wastage of the exhaled oxygen, an economy that is to a certain extent offset by the use of soda-lime. The interposition of the rubber tube between mouthpiece and soda-lime necessitates a little rebreathing of carbon dioxid. If the tube and metal connection are 47 cm. long, with a diameter of 1.2 c.c., the interposed volume is 53 c.c. The tidal air in normal persons is about 500 c.c., and in pneumonia it is rarely below 250 c.c.[39] Rebreathing of carbon dioxid thus occurs to a slight extent and might tend to deepen respirations. It is possible that this action is beneficial in that it decreases the work of the pulmonary bellows by providing a more efficient ventilation. On the other hand, there is some evidence that difficulty in getting rid of carbon dioxid is frequently present in pneumonia.[40] The dead space would have no action as far as oxygen is concerned, as the entire circuit, including the alveolar air, would be filled with a high concentration of oxygen. The carbon dioxid would not be likely to accumulate to any serious extent since the nose is left open, allowing free diffusion with the outside air. However, it seems on the whole preferable to interpose no additional dead space, and for that reason the apparatus has been modified by the insertion of an inspiratory and expiratory valve and another piece of tubing. The oxygen is thus passed through the soda-lime in a continuous circuit with no rebreathing of carbon dioxid, an idea adapted from the Roth modification of the Benedict portable metabolism apparatus. It is obvious that an expiratory valve could be used in place of the soda-lime, the apparatus then consisting of mouthpiece, expiratory valve, rubber tube and collecting bag. The wastage of the exhaled oxygen would make it a more expensive method, but it would be very simple in operation. It would still possess the advantage of not unduly disturbing the patient, for in our experience the soft rubber mouthpiece caused only slight discomfort, whereas the face mask could rarely be borne because of the marked sense of suffocation it produced.[41]

The Meltzer insufflation apparatus requires the constant presence of an attendant to turn the expiratory valve at each expiration and inspiration, and at the same time hold in place the metal tongue depressor that conducts the oxygen. We have had no personal experience with the method, but it does not suggest comfort for the patient, and it would appear a tedious task to operate it over long periods. The oxygen bedtent represents a more complicated attempt to deal with the problem. In order for it to be successful,

34. Tunnicliff, F. W., and Stebbing, G. F.: Intravenous Injection of Oxygen, Lancet **2**: 321 (Aug. 19) 1916. J. J. A. McMillan: U. S. Nav. M. Bull. **13**: 88 (Jan.) 1919; **11**: 191 (April) 1917.

35. Stuertz, E. Z.: Diatet. in Physik. Therap. **7**: 67, 159, 1903. Naessens, W. M.: Subcutaneous Injection of Oxygen, Nederl. Tijdschr. v. Geneesk. **1**: 410 (Jan. 22) 1921. Bayeux, R.: Subcutaneous Injection of Oxygen in Influenza, Bull. de l'Acad. de méd., 1922, p. 176. Howitt, H. O.: Subcutaneous Injection of Oxygen, Canadian M. A. J. **4**: 983, 1914.

36. Haldane, J. S.: Therapeutic Administration of Oxygen, Brit. M. J. **1**: 181 (Feb. 10) 1917.

37. Hill, L.: A Sample Oxygen Bed Tent and Its Use in a Case of Edema and Chronic Ulcer of the Leg, J. Physiol. **50**, May 24, 1921; Proc. Physiol. Soc., p. 20.

38. Henderson, Yandell: Personal communication to the author.

39. Barach, A. L.: A Simple Apparatus for Administering Oxygen, J. A. M. A. **78**: 334 (Feb. 4) 1922.

40. Means, J. H., and Barach, A. L.: The Symptomatic Treatment of Pneumonia, J. A. M. A. **77**: 1217 (Oct. 15) 1921. Barach, A. L.; Means, J. H., and Woodwell, M. S.: The Hydrogen Ion Concentration and Bicarbonate Level of the Blood in Pneumonia, J. Biol. Chem. **50**: 413 (Feb.) 1922.

41. Since this apparatus has been used by others, several points have come up that are worth mentioning. The rubber mouthpiece as supplied is identical with that used in the Benedict metabolism apparatus. It has a wide margin which fits between the teeth and lips, and prevents leaks in respiration experiments. For oxygen administration, however, the margins should be cut down considerably, as the comfort of administration is greatly increased. One-fourth inch margin opposite the upper and lower lips and one-half inch at the corners is usually satisfactory. At times patients hold the mouth piece more comfortably when the margins are placed behind the teeth rather than between lips and teeth. A water bottle interposed between tank and collecting bag tends to prevent drying of the back of the throat. It is good policy to let the oxygen bubble through the water bottle into the bag continuously rather than to let the bag empty before refilling. This prevents the possibility of nitrogen in the exhaled air unduly accumulating, and insures the breathing of a high concentration of oxygen. The collecting bag does not contain pure oxygen, since the exhaled nitrogen dilutes it slightly. The exact concentration of the mixture, if desired, can be obtained by withdrawing a sample from the attached stopcock and analyzing it in a Haldane or other gas analyzer. It might also be added that coughing does not in any way contraindicate the use of the mouthpiece. It is only the occasional pneumonia patient who coughs frequently during the administration. Under these circumstances he may allow the mouthpiece to slip out by opening his lips and turning his head aside. The metal frame holds the mouthpiece in place so that he may easily close his lips over it when the coughing is over. I have recently added glass mouthpieces with small margins to interchange with the rubber variety when the latter causes salivation. By use of one or the other mouthpiece, a fairly comfortable administration can usually be secured.

provision must be made to keep it from becoming warm and stuffy, and careful regulation of the contained oxygen and carbon dioxid must be carried out, as in an oxygen chamber, to render it safe. The bed-tent seems to offer great promise for a comfortable and effective method of administering oxygen, although at present it is hardly available for common use.

SUMMARY

The lack of enthusiasm with which oxygen therapy has been regarded seems largely due to the absence of an ideal method of administering it. The successful treatment of gas poisoning by oxygen inhalation during the war offered unmistakable evidence of the favorable results that may follow effective oxygen therapy. This led to a renewed inquiry into the subject of the therapeutic use of oxygen in clinical conditions.

Recent investigation has shown that the effects of acute anoxemia may be harmful, that they exist in clinical disease, and that to a certain extent they can be prevented or overcome by appropriate oxygen treatment. It is on the basis of this evidence that I believe the use of oxygen is a rational and important therapeutic measure.

The essential indication of its employment is acute anoxemia.

Since the abrupt onset of oxygen insufficiency occurs most frequently and most severely in pneumonia, it is in this disease that oxygen therapy is most needed.

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ABSTRACT OF DISCUSSION

Dr. Walter M. Boothby, Rochester, Minn.: It was one of my duties in France to investigate the effect of oxygen treatment in gassed soldiers. I can concur in the advantages obtained from an efficient administration of oxygen as recommended by Haldane in cases of phosgen and chlorin poisoning with edema of the lungs. A thorough clinical trial should be made of oxygen properly administered in an extensive series of pneumonia cases. The apparatus devised by Barach will give oxygen efficiently, and this, or some other apparatus of this type such as that devised by Haldane for use in the army, should be used. Oxygen is not a therapeutic agent in any sense of the word. Its administration merely aids in getting into the body under adverse conditions oxygen in sufficient concentration so that the circulation rate may be decreased. The load on the heart is relieved by increasing the amount of oxygen in the blood through the inhalation of an oxygen percentage from two to three times that contained in ordinary air. Any procedure that will relieve the strain on the heart promises to be of material value in pneumonia.

Dr. C. W. Greene, Columbia, Mo.: I have been much interested in the development of the clinical methods as reported by Dr. Barach and the Rockefeller Institute. In the Air Service the problem is strictly one of oxygen supply. The tests for aviators by the Medical Research Laboratory rest on the reactions a man gives if we gradually shut off the oxygen supply, as in going to the higher altitudes. There are various critical aspects to this question. The answers can be had from experiments with animals and normal men. Such tests determine in no small measure what we may expect from diseased conditions. There are a number of organs and physiologic mechanisms, which Dr. Barach has mentioned, in which lack of oxygen produces a drive to increased work. That undoubtedly involves the respiratory center and the circulation. If the oxygen is progressively reduced, it is surprising how far down the scale one can go without risk. In many persons the reduction of the oxygen in the air breathed can be carried down to 10 per cent. before one can detect any change readily charged to oxygen want. In the human being, "inefficiency" begins somewhere about 8, 7 or 6 per cent. The last thing that is observed is a much higher respiratory and heart rate. With the higher heart rate, an apparently greater per minute volume of blood is going through the body; hence a faster flow by the absorbing pulmonary tissues and by the peripheral tissues. The point I want to make is that under ordinary conditions, when the oxygen of the air is reduced to 8 per cent. or more, the compensations in the respiratory and circulatory mechanisms take to the tissues all the oxygen they ordinarily use and need. Dr. Carl Greene and I have analyzed venous and arterial blood simultaneously, when the oxygen in the air is reduced to a point at which the animal stops breathing. We have found that the tissues take practically a uniform amount of oxygen until the oxygen of the arterial blood is actually reduced to the level represented by the volume lost in the peripheral tissues. In other words, the tissues get their quota of oxygen if the arterial blood contains about 30 per cent. of the normal amount of oxygen. That means that the percentage of oxygen by volume distributed to the tissues is more adequate in extreme conditions than we have supposed. Now, if the oxygen reduction is below that critical level, then the animal rapidly goes into the condition of extreme decompensation and coma; respiration will stop very soon, though the heart and circulation go on, in an animal, for five or more minutes longer. Experimenters lay less emphasis on the strain of oxygen want on the circulatory apparatus. I think that more stress should be laid on the response of the nervous apparatus. If we put the question another way, it means that if anything occurs to reduce the carrying power of the blood for oxygen, such as the reduction of hemoglobin, there is a far greater physiologic strain than if we reduce the percentage of alveolar oxygen below the normal. It is in the final analysis a question of the volume carrying power of the blood. The increased volume of oxygen inhaled does something in helping to bring matters up to a more nearly normal level, but not so much as many suppose. The percentage of advantage bears no direct ratio to the increased oxygen percentage in the enriched air breathed. The gain to the body, especially the nervous system, by even the fraction of a per cent. of available oxygen working over a long period of time, will sometimes save the day in a losing moment.

Dr. R. R. Shippey, Wichita, Kan.: In pneumonia, one of the most vital things is lack of oxygen. The amount of oxygen actually needed may be comparatively small. It seems to me that we have escaped from the old time proposition in treating pneumonia. A few years ago George Douglas Head gave histories of about 1,500 cases treated with free ventilation and cold air, and his death rate was 15 or 20 per cent. Acting on the idea that it was absolutely necessary to make some change because the death rate was so high, he changed his plan almost entirely, and, as far as possible, followed out the plans that our grandmothers used. And his death rate dropped below 3 per cent at once. Years ago, when Willie Jones had "lung fever" and Grandma came in to take care of him he got well. What did she do? Put him in between feather beds, placed a wool sock around his neck, and put goose grease on him. They will recover today if you follow that plan. They will get their oxygen. The congestion in the lungs can be relieved by keeping the surface of the body warm and moist, and they will all recover. In a case of pneumonia, I insist, first, that these patients shall be between blankets. I insist also that they wear some heavy underclothes that cover the shoulders, chest and arms thoroughly. On top of that I want a heavy gown and sweater. How often do we see pneumonia patients in hospitals with head up to the window and only a pink ribbon over the shoulders of the women? They died in a few days.

Dr. A. J. Carlson, Chicago: Has the speaker any statistics proving the value of oxygen in the saving of life or decreasing the symptom in pneumonia? Will the speaker explain how the administration of oxygen in marked lung consolidation can increase the oxygen of the blood? It is very difficult to know what we have done for the pneumonia patient, without very extensive statistics. I am not familiar with any statistics showing that we have actually done anything for a pneumonia patient by letting him breathe 40 or 50 per cent. of oxygen. The mere fact that we are putting 50 per cent. of oxygen into the lungs does not mean that we are increasing the oxygen and decreasing the carbon dioxoid in the blood.

DR. HAROLD E. B. PARDEE, New York: Any one who has seen oxygen given to a pneumonia patient would not demand a statistical study of the effect on mortality. It is quite evident that, when a patient who has been cyanotic, dyspneic and with a very rapid pulse shows less cyanosis, less dyspnea and a slowing of the pulse rate after the administration of a certain treatment, this treatment has led to an improvement of his condition, even though it may be a temporary one. This is the sort of change which is produced by proper oxygen administration. The drawback to oxygen administration, as suggested by Dr. Barach, is that it calls for a special device. It is another bit of apparatus for the physician to buy, and because of this it will not be used as much by the physician as the value of proper oxygen therapy warrants. I should like to empahsize that a very good oxygen effect can be obtained by using a tube directly from the oxygen tank, the gas having first bubbled through water so that we can observe its rate of flow, and placing the end of the tube about an inch or an inch and a half from the patient's nostril or mouth, depending on which of these the patient is using for breathing. A stream of oxygen is thus mixed with the inspired air, and I know that this will sometimes produce a beneficial effect, though it probably will not do so as often as a proper rebreathing apparatus. My point is that this is much better than no oxygen at all because of lack of apparatus, and also better than the commonly used funnel method of giving oxygen. Perhaps, after seeing the benefit in a few cases, the physician will feel more ready to own the apparatus. The method is also, of course, wasteful of oxygen.

DR. M. A. MORTENSEN, Battle Creek, Mich.: Four years ago I had the influenza, with a double pneumonia. I remember that as long as I was conscious one of the things I felt I needed was oxygen. Consequently, I offer these suggestions with a great deal of assurance. I was given oxygen by stimulating my heart. Since that experience and reading in the journals of the methods of giving oxygen, and its value, I have used oxygen in a number of cases. And in any case of pneumonia, an extreme case of cardiac inefficiency, especially cases that have developed very suddenly, the administration of oxygen has certainly produced a very apparent change in the patient's condition. There has been a relaxation and better breathing, and a better color is manifested immediately. In a few cases we have obtained definite evidence of the increase of the oxygen content of the blood. Our experience has been that the application has been most agreeable to the patient. The method of application that has been most agreeable has been by putting a tent over the upper part of the bed, a rather small one, and then letting an abundant supply of oxygen from the oxygen tank enter that space. Marked improvement has been evidenced in those cases.

DR. ALVAN L. BARACH, New York: Dr. Greene's work is very interesting. However, his statement that a decrease in the content of oxygen in the arterial blood is of more importance than a decrease in the arterial oxygen saturation is in opposition to the belief expressed by Barcroft, namely, that the arterial or anoxic anoxemia furnishes less oxygen and is more dangerous to the patient than either the anemic or the stagnant type. The fact that an animal may live for a short period of time with an arterial saturation of 30 per cent. hardly justifies one in assuming that serious injury is not taking place. In the chamber and in high altitude experiments quoted in the paper, it is shown that an abrupt lowering of the arterial saturation to 70 or 80 per cent. produces delirious states and other rather well marked symptoms. The factor of the length of time that oxygen want is sustained must be considered. In pneumonia the anoxemia may persist for days and is consequently more serious than a similar deprivation lasting an hour or so. It is interesting that the difference between the arterial and the venous oxygen content remains constant down to an arterial saturation of 30 per cent.; but since we do not know the blood flow, we cannot conclude that the needs of the organism for oxygen are fully satisfied, and certainly we do not know that they are satisfied in a way most advantageous to the organism. In reference to the question of Dr. Carlson as to whether there was any statistical evidence of a reduction in mortality brought about by oxygen therapy: The total number of reported cases of pneumonia treated effectively with oxygen is as yet too small to present any conclusions purely on the basis of statistics. The clinical improvement in individual cases, with the simultaneous increase in the amount of oxygen in the arterial blood, has been the criterion of its value. The question as to the cause of the cyanosis in pneumonia and the reason that effective oxygen therapy may not invariably relieve it is discussed in the paper. The nasal tube is of help in infants whose oxygen consumption is small. In the mild cases of anoxemia in adults it may also be of help. The bed tent offers great promise, but must be perfected before it can be commonly used.

THE NEW SHORT WAVE LENGTH ROENTGEN-RAY THERAPY*

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Especially within the last three years the interest of the profession in this country has been aroused by claims advanced for the value of the "new deep roentgenotherapy," a method of radiation involving the use of rays of much shorter wave length than have heretofore been available for purposes of treatment. For a decade such physicists as Duane, Dessauer and Coolidge have been seeking means for producing roentgen rays of wave length nearly approximating the shorter gamma rays of radium. Refinements have been reached in the construction of roentgen-ray apparatus, permitting the maintenance of constant very high voltages (from 200,000 to 280,000) delivered at the roentgen-ray tube terminals. Dr. Coolidge has continued the development of his tube until we now have a type of roentgen-ray tube, capable of withstanding more than 200,000 volts at 8 milliamperes in continuous use. The physical and biologic investigations carried on simultaneously in Europe and America constitute, collectively, one of the most valuable and well-directed pieces of research in the history of medicine, and, for the first time, afford data upon which really precise measurements of dosage in radiation therapy may be based.

It is incumbent on us as surgeons to recognize a certain degree of obligation demanding that we know the essential facts and factors relating to the new method, in order to decide whether or not we are willing to refer our cancer patients to specialists in this penetrating roentgenotherapy. What is the difference between the so-called "new" roentgenotherapy and the type of deep treatment with which we have been more or less acquainted during the last ten or twelve years? Are there dangers inherent in the new method—dangers of damage to skin or deep structures, especially the blood and the blood-forming organs—which suggest reserve? Is it likely, as has been openly charged by some, that the danger of metastasis from malignant lesions is increased? Are the results obtained by the new method notably better than those possible with the equipment and technic already in daily and extensive use? Are there economic considerations which should not be overlooked?

FEATURES OF NEW SHORT WAVE LENGTH ROENTGEN-RAY THERAPY

The following factors are accepted as integral features of the new deep roentgenotherapy:

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* From the Surgical Section, Battle Creek Sanitarium.
* Read before the Section on Surgery, General and Abdominal, at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. *The Production of Roentgen Radiation of Much Higher Penetrating Quality Than Hitherto Known.*—The usual standard roentgen-ray equipment to be found throughout the country utilizes, for diagnostic purposes, voltages of from 40,000 to 70,000, and for therapeutic applications voltages varying from 90,000 to 125,000, corresponding to a back-up spark gap of 9½ or 10 inches (24 or 25.4 cm.). The new equipment employs voltages up to 280,000, the average being about 210,000, or nearly double that heretofore in use. This high voltage produces roentgen rays of relatively shorter wave length and correspondingly increased penetrating power, more and more closely approaching that of the gamma rays of radium as the voltage is raised. Comparison of the biologic effects of the new harder rays and of the gamma rays of radium, on the skin, for instance, at once makes it evident that marked progress has been achieved in producing more penetrating roentgen rays, and that we may look on the radiation provided by the new 20 inch (50.8 cm.) spark apparatus as closely approximating in physical characteristics the gamma rays of radium.

2. *The Employment of a Greater Distance Between the Tube-Target and the Skin.*—A few years ago we believed it important to bring the tube as near the part as possible, assuming that the nearer the tube to the part, the more efficient the irradiation. Special tube holders were constructed to permit a reduction of the tube focus-skin distance to as short a distance as 12 cm. But the special physical investigations above referred to have revealed the fact, at first glance astonishing, that the greater the distance between the tube-focus and the skin overlying the part under treatment, the larger the proportion of the roentgen rays incident upon the skin to reach a given depth, say 10 cm. The only limit on the remoteness of the tube-target is that placed on it by time considerations, for with other factors constant, the time required for a single seance increases in proportion to the square of the distance.

3. *The Utilization of Larger Skin Areas for Each Field of Application (Port of Entry).*—This is another point at which there is great variance with our previous conceptions. Formerly, in order to introduce a sufficient sum total of radiation into the depth of a part, it was thought advisable to employ a great many small ports of entry, and this is doubtless, to a certain extent, still true if one is obliged to continue the use of the 10-inch (25.4 cm.) gap apparatus. But it is now evident that within certain broad limits the larger the field of irradiation, the greater the proportion of the incident radiation which will reach a given depth, say 10 cm. The explanation of this fact is clear in the light of our new knowledge of secondary radiations.

Barkla and his pupils showed that there are three kinds of secondary radiations: (*a*) The secondary characteristic, or fluorescent ray, which is solely and singly peculiar for the substance in which it is excited. (*b*) The secondary beta radiation, which is a corpuscular radiation easily absorbed in a few millimeters of tissue. It is probable that the biologic effect of both radium and roentgen rays must finally be attributed to such corpuscular secondary beta radiation. (*c*) The most important of the secondary rays from the standpoint of deep dosage, termed the *scattered radiation*, which possesses the same wave length and other physical properties as the primary exciting ray. Since it is analogous to the scattering of light rays in a relatively opaque medium, it is evident that the larger the field of incidence, the greater the effect of the scattered radiation.

4. *The Use of Filters of Greater Density.*—We have from a tube in action a beam of roentgen rays made up of various wave lengths. The rays of each wave length vary considerably in quality as well as in intensity. The direct absorption by any given tissue is proportional to the cube of the wave length, although the scattering is the same for all wave lengths. It is, therefore, apparent that the longer wave lengths are not useful in the treatment of deep-seated lesions, being almost entirely absorbed by the tissues near the surface. In the effort to force through the superficial tissues a sufficient intensity of roentgen rays to affect the deep-lying lesion, so great an amount of radiation might be absorbed in the surface layers as to produce serious damage. To guard against such an effect, filters are interposed between the source of the radiation and the skin overlying the part. These filters of copper, zinc or aluminum are used of such thickness as will remove one after another the various components of the complex bundle of rays given off at the tube, leaving only rays of such wave length as will pass through succeeding layers of tissue, maintaining a constant proportion of radiation intensity absorbed by each layer. When thus properly filtered, the radiation is said to be nearly or practically homogeneous.

VALUE OF SHORT WAVE LENGTH RAYS

The value of these practically homogeneous rays will be immediately appreciated. Such radiation permits the bathing of the part with rays of similar biologic and physical value in quantities nearly, if not quite, equal for each cubic centimeter of the tissue under fire, and at the same time almost entirely removes the danger of skin damage. Contrast this possibility with the conditions obtaining under radium irradiation, except in those few institutions possessing very large amounts of this precious element. With radium locally placed, even though applied in large quantities and with all ingenuity as regards kind and thickness of filter, it is impossible to secure anything approaching homogeneous radiation on account of the working of the inexorable law of radiant forces whereby the intensity of the radiation diminishes inversely as the square of the distance from the radiant source. To obtain a sufficient dose to destroy cancerous tissue several centimeters from the radium container, severe tissue damage, often severe necrosis, must be produced in the contiguous tissues. This problem is only partly solved by the distribution of buried emanation or by the introduction of removable radium needles into the depth of the tissues, on account of insuperable anatomic difficulties encountered in almost every deep situation to be attacked. For instance, in uterine carcinoma, it is generally conceded that with radium therapy glandular involvement spells defeat, it being practically impossible to deliver a lethal dose to the cells of the related glandular areas already involved or along which experience teaches us the disease is likely to spread, without producing irreparable damage to the vesical and intestinal walls next to the cancer. The only hope of averting defeat in such cases is through the even distribution from the exterior of a lethal dose of homogeneous radiation along the glandular paths. This may be accomplished by cross-fire, either with long application of radium packs placed at a considerable distance from the skin, employing such enormous doses as from twenty to forty gram

hours; or by the use of the new high voltage, short wave length roentgen therapy. The new roentgen-ray method permits the accomplishment of what has been shown, by physical tests, to be effects practically equivalant to those of the radium pack. This is a consideration of no small importance, first, because of a large saving in the financial investment for equipment, and second, because of the very considerable saving in time and inconvenience to both the surgeon and the patient.

Accurate comparisons of the relative merits of the distantly placed packs of radium versus the crossfire deep roentgen irradiation have not yet been published; but my own clinical observations, covering eighteen months, confirm the statements of European roentgenologists that the biologic effects of the radiations from these two sources are essentially identical and that we may, therefore, expect the same clinical results. Several hundred cases of malignant disease of the female pelvic organs treated only with irradiation (usually combining with the external, crossfire, intensive homogeneous roentgenization the local application of radium) have now been observed for a period of three years, and not a few have survived the five year period without recurrence of the disease. The transient superficial skin reactions resulting from even a considerable overpassing of the erythema dose with the new roentgen method are similar to those produced by the highly filtered radium rays, in distinct contrast to the reactions seen from overdosages of the skin under the older technic. These skin reactions give rise to no anxiety, for they quickly disappear, as do those of radium.

RESPONSE OF VARIOUS TISSUES TO THE RAYS

The different tissues of the body respond in varying fashion to intensive irradiation. Even the skin of different portions of the body varies in its radiosensitivity. The face, the back, the thigh, the abdomen and the skin of the neck show diminished resistance in the order named. Basing their work on the skin erythema dose, that is, that amount of roentgen rays which will, within from eight to fourteen days, be followed by a slight reddening of the skin, and in four weeks by a definite brown discoloration, Seitz and Wintz have carried out extensive experimental studies to determine the sensitivity of various tissues to short-wave roentgen rays. The results obtained by them are: "skin erythema dose, 100 per cent.; ovary castration dose, 34 per cent.; sarcoma dose, from 60 to 70 per cent.; carcinoma dose, from 100 to 110 per cent.; rectosigmoid dose, 135 per cent., and muscle dose, 180 per cent." These authors assert that the skin sensitivity in different individuals varies not more than from 10 to 15 per cent.

None of us can, for a moment, admit the possibility of establishing a definite dosage of radiation which will be lethal for all types of malignant disease, not only because of the inconstancy of the skin erythema as a standard but also because of the long recognized marked differences in radiosensitivity of the various types of sarcoma and carcinoma. Nevertheless, these experiments furnish what is for the present our best working basis, and the undeniably promising good results from radiation therapy founded on these tentative deductions should stimulate comprehensive and far-reaching experimental studies concerning a biologic standard dose.

DANGERS ENCOUNTERED

Now, as to the dangers attending the use of the new method. The possibility of serious skin damage is much less than with the older 10-inch (25.4 cm.) machine technic. This is not only what we would expect from the physical investigations above referred to, but it is also an observed fact in the actual experience of those who have made extended use of this new method. With the "super" roentgen rays there is much less danger of damage to the skin than of giving an insufficient dose; underdosage may lead to failure in cases in which success would have attended more thorough-going treatment. As has been pointed out by numerous observers, malignant tissues rapidly acquire a tolerance to radiation. An insufficient dosage may thus lead to defeat through missing the first and, therefore, the best opportunity for possible success. There is also much reason for believing that the underdose may by stimulation of the growth of malignant tissues encourage the very process we combat.

I have seen no obstinate skin reaction in any case subject to the high voltage roentgenization either in my own clinic or in any of the many foreign clinics I have visited. Some may be reported later, but none have yet reported to me serious skin damage following our treatment. A few, astonishingly few, at that, late severe reactions have been recorded; but, in the future, we shall be able to avoid them, especially if we insist upon the single massive dose idea, the entire treatment being administered within from two to eight days, according to the physical condition of the patient. When one prolongs or repeats the massive doses under the new technic, a characteristic form of induration of the skin, a chronic indurated edema, may develop, which under continued treatment may give rise to late ulcerations. This rare accident should not occur if the treatment is discontinued at once on the appearance of these characteristic edematous areas. To repeat, the harder the ray and the more intensive the treatment, the less the danger of skin damage.

As for the deeper structures, damage to muscle has not been observed except as an indurated edematous process similar to that observed in the skin and subcutaneous tissues. It has not occurred in any of my cases. Occasionally, in breast or mediastinal lesions one sees a pleural reaction to radiation expressed as a painless thickening of the interlobar or parietal tissues, with sometimes an underlying pneumonic change in areas subjected to very intense crossfire. Superficially placed glandular areas often exhibit an astonishing, and at first alarming, immediate reaction, characterized by swelling, redness, decrease of secretions and fever. When treating the cervical regions, the immediate result is intense dryness of the mouth and throat, edematous swelling of the uvula, irritation of the pharnyx, esophagus and larynx, sometimes with a tendency to temporary aphonia, all of which disappear within a few weeks, though sometimes succeeded by a curious submental subcutaneous swelling, occurring irregularly at the most dependent portion of the chin. In treating the pelvis, vesical and rectal tenesmus are frequently noted, and looseness of the bowels may supervene, reaching its climax in ten or fifteen daily evacuations at about the ninth day. Vaginitis and proctitis may occur even when no radium or intravaginal or perineal roentgen treatment has been administered. In occasional, rare cases, rectal ulcerations have been noted. Three such cases have recently been reported in one European clinic where thousands of patients have been irradiated by the new method—certainly a relatively rare accident.

In fact, the occurrence of these temporary, severe reactions in the deeply seated organs should give encouragement as demonstrating that the dose has actually been delivered to the deep-lying tissues. Not infrequently, in connection with treatment about the neck and cheek, we are chagrined to find the hair falling out of the back of the head although the hair-bearing areas have been carefully covered with protective material. It is evident that the dose applied has gone clear through the head with the delivery of a sufficient proportion of the rays on the opposite side to depilate the scalp without overdosing the skin of the neck or face through which the rays have entered. We have learned to diminish this danger by altering the angle of incidence of the rays, and by changing the wave length and the thickness of filter to suit the depth of the lesion under fire.

Severe blood alterations have been widely heralded as an objection to the new method. Reports have been made of deaths attributed to the treatment, and of blood transfusions being used as a more or less routine procedure in some of the European clinics to repair the damage done to the blood by the deep treatment. While visiting the leading surgical clinics of France and Germany last fall I made careful inquiry with reference to the untoward effects of the deep irradiation, and satisfied myself that there is no real foundation for the reports which have been circulated in this country. In our own work we have carefully and repeatedly examined the blood of our patients subjected to the heaviest irradiation, but no serious changes in the blood have been noted. The hemoglobin and the red cell count have dropped slightly, not more than 5 per cent. on the average, to return to normal within a few days. Only rarely have we seen a drop of more than half a million in the red cells, never as high as two million or more, as has been reported by some American roentgenologists. The leukocytes have shown a very transient increase followed promptly by a leukopenia with a gradual return to normal within from three to five weeks. There has been no case in my own work in which I have thought the reaction from the radiation demanded a blood transfusion. I have selected a few cases for preradiation transfusion on exactly the same indications as would lead me to transfuse a patient preliminary to a surgical operation. Very cachectic patients are not suitable for radiation therapy; and the administration of a heavy dose of penetrating radiation may actually shorten the life of one who is already near death. It would be, indeed, surprising if there were not noted certain biologic effects upon the blood after the prolonged irradiation of a considerable mass of tissue; but it has been demonstrated beyond controversy that these blood changes are neither alarming nor permanent.

Are we likely to encourage metastases by deep roentgenization? Surely no more than by local radium treatment, if indeed so much. It is our custom to combine the roentgen and the radium treatment whenever possible; and in these cases of combined radiation therapy we employ the external roentgen treatment first in the hope of at least attenuating the malignant cells, if not, indeed, of destroying them, thus lessening the chance of transplantation of cancerous tissue by the instrumentation attending the introduction of the radium. A few statistical reports are at hand, notably that of Wertheimer of the Frankfurt Frauenklinik, concerning the frequency of metastasis in carcinoma of the uterus, comparing unrayed cases with a similar series of patients subjected to radiation of the type we are discussing. These figures make apparent that proper administration of deep roentgenotherapy does not increase the development of metastases. In fact, when it is considered that only the more unfavorable cases were submitted to the radiation, it is probable that the treatment has retarded considerably the formation of metastases.

The roentgen sickness, observed also after intensive radium applications, is an inconvenience rather than a danger. It is inconstant in its occurrence, and only rarely lasts more than from twenty-four to forty-eight hours after the cessation of the treatment. Many patients escape it altogether. It is not in any way a serious reason for withholding the treatment in any case of malignant disease.

SUCCESSES

As to the apparent successes, no one is yet willing to speak too loudly nor too hopefully; sufficient time has not yet elapsed. The purpose of this paper is not to give out statistics which may prove premature nor to claim permanent success hitherto unattained, but rather to call attention to the sound physical basis underlying the new method and to remove the apprehension of danger from the method which has been raised, by unfounded reports concerning untoward results. The work done in this country with deep roentgen-ray therapy has thus far been so limited in amount and so sporadic in character that it is as yet impossible to present a correlated statement of results. The immediate effects obtained from these penetrating radiations are in many cases so remarkable and so superior to what has been accomplished before by other methods of treatment that employment of the method seems to be well worth while, even though the permanency of the beneficial results obtained should ultimately be less than there seems now to be good ground to anticipate. Among these immediate results may be mentioned the complete disappearance of ulcerating carcinoma of the cervix with extension onto the vaginal wall, this good result continuing more than a year after cessation of the treatment; unhoped for palliation in carcinoma of the pancreas and chronic pancreatitis; marked relief from pain in hopeless cases which had resisted other analgesic means; temporary subsidence of symptoms from bone metastases, etc. It is well understood by all of us that similar palliative results have been from time to time achieved by the older roentgen method; but there is no doubt in my mind that in any consecutive series of patients applying at our clinic with malignant disease, we are able, with the new method, to achieve greater palliation, of a more lasting character, in a larger percentage of cases than heretofore. With the encouragement given by the European statistics now covering three, and in some instances, five years, we are justified in an outlook which may be described as mildly optimistic.

INDICATIONS FOR EMPLOYMENT OF NEW METHOD

Combined with the internal employment of radium, the new deep roentgenotherapy should be employed as an adjuvant to surgery in all cases of deepseated malignant disease. Preoperative irradiation carefully planned will not interfere with the surgical procedure, and it gives every promise of being helpful by diminishing the prospect of recurrence of the disease. Postoperative irradiation is also undoubtedly a help. In

my own surgical work I use the combined roentgen and radium radiation both preoperatively and postoperatively, when the diagnosis is established before the surgical procedure; at least postoperatively when the operation discloses the malignant nature of the disease. Our tendency is to become more and more conservative in the selection of cases for radical removal of malignant uterine disease, believing that even in the early and distinctly operable cases it is justifiable to rest on the combined radium and roentgen application, although in practice we still operate in such cases. In breast cancer, we still recommend the radical operation for all malignant lesions in an operable stage, but we do not neglect the associated irradiation.

In closing, it may be repeated that the new deep radiation therapy, combining the roentgen with the radium treatment whenever possible, is especially promising by reason of the practically homogeneous radiation of deep-lying structures permitted, without serious damage to normal parts. The greatest good results and apparent cures have been obtained by cross-firing uterine carcinoma. The breast, the cervical regions, the mediastinum, and the esophagus follow in the order named with little help of a permanent nature thus far in neoplasms of the esophagus. In the stomach, pancreas and liver, we entertain no hope of permanent cure, although our most striking immediate results have been in cases of pancreatic tumor. Sarcoma of certain types responds most encouragingly. Unusual palliation has been secured in rectal and vesical cancer, as well as in malignant disease of the uterine adnexa. There are no untoward effects from properly proportioned treatment which should lead us to fear its use. If the good results thus far seen do not prove to be permanent, they will at least be much superior to any previous accomplishment. The attack must be carefully planned in each case, taking advantage of all arms of the service, the scalpel, the cautery, roentgen rays, radium and careful preliminary preparation of the patient, as well as thorough postirradiation care. Every case should be regarded as of the same gravity as any major surgical operation. Every effort should be made to accomplish the destruction of the stronghold of disease in one grand offensive, for no subsequent attack can possibly offer an equally good prospect for success.

ABSTRACT OF DISCUSSION

DR. GEORGE E. PFAHLER, Philadelphia: With reference to recurrent and metastatic carcinoma following operations on the breast, most of these patients will die no matter what we do. At best we must think of prolonging life. I have never seen one case of recurrent, or metastatic carcinoma, in which I did not feel that life was not prolonged by irradiation. Probably most, if not all, of these patients will die of the carcinoma, especially the recurrent and metastatic cases, but I have had cases of definite and rather extensive recurrences, and the patients are still alive and free from symptoms at the end of ten years. Most of them will probably not give such results, but these results have been obtained with the slowly developing, rather inefficient technic which was developed during fifteen or twenty years. Several patients have shown very decided benefit in extensive metastatic carcinoma of the bone. One patient was operated on by Dr. Deaver for carcinoma of the breast; within six months she had spinal symptoms. After being in bed for fifteen weeks, and sent to the hospital against my advice, a roentgen-ray examination was made and we found total destruction of the second lumbar vertebra and nearly complete destruction of the eighth dorsal. I got the patient on her feet in six months, doing her house work, and she continued to do it for nearly four years. Then she developed enlargement of the liver and died, probably of metastatic carcinoma of the liver. There was no postmortem examination. That patient showed complete recalcification of these vertebrae. I am mentioning this only to show that even in days gone by we did deliver the rays into the deeper tissues and did produce results. The surface recurrences are dealt with more easily. I have seen so-called metastasis within the chest disappear. We should deliver as much as the tissues can stand. The tumor should have three or four times as much irradiation as the surrounding tissues. Every patient should have anteoperative as well as postoperative treatment. The newer technic is simply a development from first 5, 6, 9, 10 inches, and now we are up to 16. At present, there is no roentgen-ray tube that will stand more than a 16 inch spark value. We first had the sole leather filters, then aluminum up to 6 mm., then 0.5 mm. of copper, and then 1 mm. of copper. If we can increase our results 25 or 30 per cent. we should feel that we have made great progress.

DR. THOMAS A. GROOVER, Washington, D. C.: A large percentage of patients with cancer of the breast are operated on when, as a matter of fact, they are inoperable. There is a wide difference of opinion as to the relative places of radiotherapy and surgery in the treatment of malignant disease, and there is also some difference of opinion as to the most effective manner of combining the two measures. If we assume, however, that radiotherapy has a place in its management, I think we will all agree that it should be used before postoperative recurrence has taken place, and I am of the opinion that it should precede operation in breast cases. Many thousand recurrent carcinomas of the breast have been treated more or less efficiently by roentgen ray and radium. The percentage of bona fide cures from such treatment must be very small, indeed. However, something can be accomplished in these cases, and with improvements in technic still better results will be obtained in the future. I am inclined to think that the time is not far distant when a readjustment will have to be made with respect to the relative places of radiotherapy and surgery in the treatment of mammary cancer. In the final readjustment I am not so sure but that the places will change and that surgery will finally come to be looked on as an adjunct of radiotherapy rather than the present attitude of radiotherapy being the adjunct of surgery. This has already occurred to a very considerable extent with respect to cancer of the cervix uteri, and with improvement in technic will doubtless be extended to other fields.

DR. JOSEPH C. BLOODGOOD, Baltimore: I have very slowly taken up the roentgen-ray treatment, either preoperative or after operation, of cancer of the breast, but in the last few years I have written to every patient living, who was operated on for cancer of the breast, in which the glands were involved, and advised treatment with roentgen ray or radium. My patients whose cases are evidently malignant, with retracted nipple and adherent skin, are given preoperative treatment. Every patient with involved glands is given postoperative treatment. I think we should give these men who are working along this line every encouragement to develop the technic of treating all these cases; but in taking up a new treatment let us not forget some certain fundamental things that have been established. First, local recurrence in the chest wall is a sign either of late treatment or of bad surgery. There is no necessity in this country for bad surgery of carcinoma of the breast. Its principles have been established, and in the small towns the surgery is just as good as in any other part of the country. The thing that promises most to increase the number of permanent cures, to decrease the number of deaths from cancer of the breast, is not surgery, it is not roentgen ray, or radium—it is immediate intervention. The surgeons and the radiologists in their localities throughout this country must call the attention of the women of their locality to the importance of immediate intervention.

DR. CARL BECK, Chicago: About two years ago we recommended in recurrences a large excision of the skin in order to irradiate the patients better. This brought to our knowledge a large number of secondary carcinomas, and we also made the same observation, that the recurrences are due to incomplete, especially external operations. We have learned to disregard the teachings and principles of most of the textbooks to make typical prescribed incisions in order to make a nice looking scar of the chest, and to remove extensively far beyond the cancer area: remove not only a little more, but go beyond what seems reasonable and wait for secondary union and give these deep structures a better chance for the rays to be applied. Then I believe the number of primary cures will be much larger than the percentage heretofore.

DR. JOHN J. GILBRIDE, Philadelphia: In recurrent carcinoma of the breast and its prevention, the radiologist is doing all he can and surgeons should avail themselves of his skill. I thoroughly agree with those who advocate both preoperative and postoperative irradiation. It is difficult sometimes to say whether a case is inoperable or not. Occasionally, one sees cases which may appear to be inoperable, but operation is followed by fairly good results. As to how to prevent recurrence in the breast: A short time ago Handley stated that large skin area removal and small fascia area removal was really wrong, and that we should do the reverse. In other words, he said removal of an area of skin with a diameter of about 4 inches, the growth occupying the center, is sufficient, and that one should remove an area of deep fascia of at least 10 or 12 inches in diameter. According to his views, recurrence takes place in the deep fascia by permeation. I do not believe that many of us will agree with Handley in regard to the removal of a small area of skin. I believe that by improving our technic we should be able at least to lessen recurrences locally and prolong the life of these patients with cancer of the breast.

DR. W. D. HAGGARD, Nashville, Tenn.: I have recently completed a study of 255 breast lesions observed during the last eleven years, of which 111 traced were malignant cases. After operation all of the cases practically in the last five years were followed by deep roentgen-ray therapy. Sufficient time has not elapsed to compare them with those of the previous five year periods. The number living and free of recurrence from five to ten years after radical operation was 45.7 per cent. The average duration of these lesions was two years and three months. They were not early cases. One in six were deemed inoperable. Eleven years ago every breast lesion observed in my clinic, of which we have records, was malignant. Fifty per cent. of the cases in the last year were benign. We are neglecting an important duty if we do not disseminate this knowledge throughout the country.

DR. J. H. SCHROEDER, Cincinnati: Since the introduction of deep roentgen therapy, the universal interest in its possibilities in the treatment of cancer has led to an almost hysterical attitude toward this new method of therapy, so that we are in danger of overlooking the fact that we are dealing with a clinical problem rather than with magic machines. Quantitative or dosimetric deep roentgen therapy is the only method that will ultimately lead to any result. I have seen the work in Erlangen, Freiburg and Berlin, and during the last six months I have had an opportunity to apply deep irradiation by means of the new deep therapy apparatus, so I can speak from experience. Dr. Case spoke of the carcinoma dose and the sarcoma dose of the Germans. They do not claim that any single dose must lead to a cure of cancer, but they maintain that a cancer cell will not die unless the minimal roentgen irradiation dose has been absorbed, and this dose may have to be repeated. I heard no one in Germany speak of a cancer cure, but they speak of deep therapy. Above all we must remember that the newer technic in roentgen therapy requires laborious application; it can never become an incident in the radiographer's busy day.

DR. JAMES T. CASE, Battle Creek, Mich.: I hesitated to talk technic before this body, but I felt we were saddled with the responsibility of deciding whether we were going to use this new method with our patients. We have tried to view the problem from the standpoint of the surgeon rather than from the radiologist's standpoint alone. We have to destroy cancer cells. By preoperative irradiation we certainly diminish the chance of traumatic spread of the disease during operation. The carcinoma dose basis which I referred to briefly and decried somewhat is nevertheless the best basis we have at present. It is the one I use in my work, recognizing its fault. It seemed to me that our knowledge of homogeneous irradiation is the biggest new contribution to the armamentarium against cancer, the biggest new help offered. There is no one who appreciates Dr. Bloodgood's remarks about the necessity of early diagnosis and avoidance of failure in operative technic more than do the radiologists themselves, nor do I believe that there is any group who suffer more heartache in taking care of the wrecks of hopeless terminal phases than the radiologists. Once more I would emphasize that in planning the attack against cancer we need the help of every one who has had to do with the case. We need the help of the surgeon, the radiologist, the knife, the cautery, radium, the roentgen rays, all combined, laying emphasis on what is likely to be a help. In that way only, by massing our forces in one grand attack, can we hope to have success.

THE TREATMENT OF CYSTOCELE*

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I would feel some hesitancy in bringing before you a subject so generally discussed were it not for the great difference of opinion that exists regarding the treatment of this condition. A review of the literature shows almost innumerable methods, ranging from the fumigations and hot applications of the ancients, to the more elaborate plastic operations of the present. The object in presenting this paper to you is to emphasize the importance of the pelvic fascia as a supporting structure of the pelvic viscera, and in the reconstruction of the vaginal outlet.

Although textbooks of anatomy give us elaborate descriptions of the pelvic fascia, we have been very slow in recognizing its true function. In all forms of uterine displacements, our attention has been directed to the various uterine ligaments to which we have attributed the function of suspension, and have overlooked the endopelvic fascia which is the true supporting structure. A concise idea may be formed if we consider this fascia as a direct continuation of the abdominal fascia firmly attached in the region of the "white line," the symphysis and pubic rami, thus bridging that portion of the outlet not firmly supported by the pelvic bones. This fascia is normally perforated by the urethra, cervix and rectum. The urethral and rectal perforations are located near the bony structures, where the attachments are more secure, while the cervical penetration is located about the center of the most dependent portion, and is, therefore, at the weakest point.

The importance of this fascia was recognized by Emmet and, later, emphasized by Stone and Martin. For many years, it has been utilized by bringing together the cut edges after a rather extensive denudation of the anterior vaginal wall. In April, 1917, I described a method for overlapping this fascia.[1] A more elaborate description was published in 1919.[2]

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Neel, J. C.: Etiology and Treatment of Cystocele, read before the California State Medical Society; abstr. California State M. J., April, 1917.
2. Neel, J. C.: Surg., Gynec. & Obst. 29: 320 (Sept.) 1919.

Rawls[3] and Bissell[4] described a similar method in 1918.

If we concede that the endopelvic fascia is the true supporting structure, cystocele and prolapse must result from a disturbed function of that fascia. The extent of the prolapse will be in direct ratio to the extent of the disturbed function; thus results a prolapse along the following planes: (*a*) urethral, clinically recognized as prolapsed urethra; (*b*) bladder, clinically a cystocele; (*c*) cervical, clinically uterine prolapse; (*d*) postcervical, clinically an endocele; (*e*) rectovaginal, clinically a rectocele.

Therefore, to effect a cure of such conditions, that function must be restored.

Unfortunately, there still remains a widely accepted view that in the formation of cystocele the fascia is torn, and through this opening the bladder protrudes, pushing ahead the vaginal mucosa only. Since we have, invariably, demonstrated an intact fascia sheath in every dissection of the anterior vaginal wall during the last six years, I unhesitatingly state that that is an erroneous conclusion. If complete tears in this fascia result during the process of delivery, the continuity is reestablished by a fibrous union before the repair takes place. We are forced to conclude that cystocele is similar to a hernia, or a diastasis, if you like. During pregnancy, there is a marked increase in the vascularity in all pelvic structures, including the fascia. Postpartum displacements and relaxations are undoubtedly due in a large percentage of cases to a subinvolution of these structures.

In the operative treatment of these conditions, the age of the patient and the extent of the planes involved are the important points for consideration. An early repair of the fascia in any one plane involved will undoubtedly contribute in the prevention of prolapse of other planes.

The term "prolapse of the uterus" has been so loosely used that it has become misleading. Too much attention has thereby been directed to one plane, without any consideration of the others, which are usually the most important. Many operations have been devised for anchoring the uterus from above, while nothing is done to support the bladder from below. I have seen almost complete prolapse of the vaginal walls recur within ten months following the usual anterior and posterior colporrhaphy and fixation of the uterus to the abdominal wall. The oval resection of the anterior vaginal wall could scarcely be considered a rational procedure. Panhysterectomy will remove the prolapsed uterus but not necessarily cure the patient. Transposition of the uterus as described by Watkins has given good results in well selected cases. These various operations, however, do not take the fascia into account; hence, recurrences are not infrequent.

In general, I believe that we are justified in stating that the positions of the urethra, bladder, uterus and rectum are maintained independently by the pelvic fascia. The prolapse of one without any disturbance of the other is of common occurrence; while general prolapse results when there is an extensive disturbance of the function of the fascia. During the child-bearing period, even though there is considerable prolapse, the radical cystocele operation, with posterior repair and abdominal suspension of the uterus, has proved most satisfactory; and it does not interfere with subsequent pregnancies.

Following the child-bearing period, the uterus becomes a liability, rather than an asset. As has been stated, the position of the bladder does not depend on the position of the uterus; hence, in complete prolapse, we must consider the support of the bladder and the support of the uterus. The conservation of a part or the whole of the uterus for menstruation only is rarely, if ever, justified. The theory that the life of the ovary depends on menstrual function is far from being established, and from my personal experience does not deserve serious consideration. Therefore, granted that the uterus has served its function, its removal reduces the condition to a more simple problem, the support of the bladder.

The following technic has been employed for the removal of the uterus through the vagina. The usual dissection of the anterior vaginal wall is made, the fascia and vaginal mucosa being separated from the bladder wall in one layer; the bladder is displaced upward, care being taken to free its attachments until it disappears behind the symphysis. The peritoneum is incised at the vesico-uterine reflection and the fundus delivered; the broad ligaments, including the round and the utero-ovarian ligaments, are clamped and incised, exposing the uterine vessels, which are ligated and cut. This procedure is repeated on the opposite side; the uterosacral ligaments are clamped, and the entire uterus is removed by sharp dissection. The broad ligaments are ligated and sutured together with the uterosacral ligaments, in such a way as to evert the ligated vessels and to leave a smooth peritoneal covering on the inside. This procedure supports the vaginal wall and tends to lengthen the vagina. The uterus having been disposed of, the operation is completed by separating the fascia from the vaginal flaps of mucosa and overlapping it, as in the simple cystocele.

Of my series of sixty-two private cases in which operation was performed for various prolapsed conditions, in twenty-seven the entire uterus was removed; in four, a vaginal panhysterectomy had previously been performed for the cure of prolapse; in thirty-one, the uterus was left, in two of which the patients had an associated urethrodiverticulum, and in one, a vesicovaginal fistula. There has been no primary mortality. Of this series, all patients have been traced except five, and there has not been a single recurrence of the cystocele.

Urinary incontinence, especially on exertion, has been a fairly constant symptom. This has been overcome by distending the dissection sufficiently to expose the urethra and the neck of the bladder, and by overlapping the fascia so as to constrict the internal urethral orifice.

Since prolapsed conditions become more troublesome about the time of the menopause, the majority of the patients will not become pregnant subsequently. However, one patient in my series has gone through two subsequent deliveries without any difficulty, and without a return of the cystocele.

In patients in whom there is a tendency for the fundus to assume the position of retrodisplacement, the lateral mucosa with the underlying fascia should be advanced to the median line of the cervix, and sutured. This step in the operation causes marked traction backward on the cervix and tends to hold the fundus in anterior position.

3. Rawls, R. M.: Am. J. Obst. **77**: 359 (March) 1918; ibid. **78**: 328 (Sept.) 1918.
4. Bissell, D.: Am. J. Obst. **78**: 1 (July) 1918.

The importance of fascia in the cure of hernia in other portions of the body is universally recognized. A similar fascia is present in all prolapsed conditions and, if properly utilized, is of equal importance. It is not a question as to whether or not the fascia is present; but rather a question of proper technic to secure the full benefit of the structure. Bissell has described a similar technic for the treatment of rectocele, and I believe his work will mark a distinct advance in the cure of this troublesome condition.

CONCLUSIONS

1. The pelvic viscera are normally supported by strong layers of fascia.
2. A disturbed function of the fascia supporting any of the pelvic planes may result in the prolapse of that particular portion.
3. The position of the bladder does not depend on the position of the uterus.
4. In the treatment of prolapse, the uterus becomes a liability rather than an asset, and the disposition must depend on the age of the patient, the desire to bear children, etc.
5. Ovarian function does not depend on menstruation.
6. Complete removal of the uterus in prolapse allows the best reconstruction of the vaginal vault.
7. Overlapping of the fascia offers the maximum hope in the operative treatment of cystocele.

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THE CAUSE AND CURE OF HIGH RECTOCELE *

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Blaisdell,[1] in his studies of the parametrium, has demonstrated that, in man and the higher primates, considerable muscle tissue exists under the peritoneal folds of the pouch of Douglas, which gives a strong support to the pelvic organs. These muscle bundles, with the meshwork of elastic and fibrous tissue around the blood vessels of the parametrium and the pelvic fascia, give the true support to the pelvic organs. The pelvic floor below, the weaker accessory ligaments above, and the intra-abdominal pressure act only in an accessory way to relieve the strain on the parametrium and the pelvic fascia.

The cardinal part of the pelvic fascia is a strong band of fibrous tissue called the arcus tendineus, which runs from the posterior surface of the symphysis upward and backward along the lines of the anterior fornices of the vagina, to a point in the neighborhood of the spine of the ischium.

Along this true white line, the pelvic fascia divides to form the fascia endopelvina, which gives support to the bladder in front, the cervix mesially, and the rectum posteriorly. The endopelvina lies partly between the bladder and the anterior vaginal wall, and partly between the posterior vaginal wall and the rectum, to terminate in the triangular ligament of the perineum.[2]

From a point on the uterus near the internal os of the cervix, certain fibrous and elastic elements surround the uterine artery. These have been described by Mackenrodt as the cardinal ligament of the uterus. From the anterior surface of the uterus, similar bundles run forward to the bladder and attach to the symphysis mesially at the origin of the arcus tendineus. These are the pillars of the bladder. Posteriorly, less well marked bands of tissue extend in a fan shape from the cervix around the rectum, to attach, usually, in the fascia of the sacrum. These are called the sacro-uterine ligaments.

Blaisdell, in his dissections, was able to demonstrate lines of fascia which curve downward from the sacro-uterine ligaments along the sides of the culdesac of Douglas, to end in the fascia of the vaginal vault. He has called them the ligamenta plicovaginalia. It is his belief that they have not been heretofore described. These ligaments are most important because they support the vaginal vault and the rectum. In patients in whom these ligaments are congenitally lacking, or have been injured in childbirth, deep culdesac formation, high rectocele, prolapse of the rectum, retroversion and retroflexion of the uterus, etc., are common. Constipation, with continued straining at stool, may account for some of the conditions of rectocele with prolapse of the uterus which are sometimes seen in the nullipara. Continued vomiting, with increased intra-abdominal pressure, particularly during early pregnancy, also predisposes to these conditions.

During the last few weeks of pregnancy, settling of the presenting part occurs. With strong sacro-uterine ligaments, the cervix remains high posteriorly, the anterior part of the uterine wall and the anterior wall of the vagina forming the sac which supports the presenting part. This predisposes to cystocele, but not to rectocele. With multiparous patients, however, early settling, especially with occiput posterior positions, and large presenting parts due to overtime pregnancies, places strain on the sacro-uterine ligaments and tends to increase the size of small rectoceles resulting from previous labors.

The mechanism of the first stage of labor tends to strain the sacro-uterine ligaments and injure the ligamenta plicovaginalia. This strain is more marked in patients who bear down with their first-stage pains. Also, obstetric operations undertaken before the cervix is fully dilated may completely destroy the posterior support of the vaginal vaults, resulting in marked degrees of rectocele without presenting any visible lacerations postpartum.

Primiparous patients, with strong, well-developed levator ani muscles and fascia, at times obstruct the advance of the presenting part during the second stage of labor, even against strong propulsive pains. This action, even though eventually spontaneous labor takes place, frequently results in damage to the sacro-uterine ligaments.

During the puerperal period, subinvolution of the uterus with retroversion, especially if patients remain too much in the dorsal position while in bed, prevents the proper involution of the pelvic fascia, which predisposes to the condition of rectocele. Finally, hard work, such as lifting and straining throughout the lactation period, and chronic constipation, particularly if associated with atrophy of the pelvic facia, complete the picture presented for a better understanding as to the causes of high rectocele. The same factors, when

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* From the Division of Obstetrics and Gynecology, Standard University School of Medicine.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Blaisdell, F. E.: Anat. Record **12**, No. 1, Feb., 1917.
2. Spalding, A. B.: Surg., Gynec. & Obst. **29**: 529 (Dec.) 1919.

associated with complete laceration of the perineum, may result in complete prolapse of the rectum.

The cure of high rectocele is essentially surgical. Nevertheless, it is important to correct, when possible, the common condition of constipation in young girls.

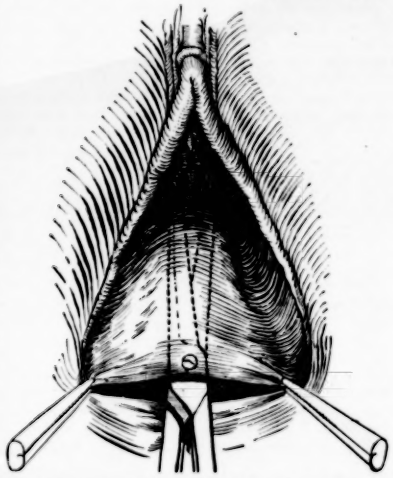

Fig. 1.—Transverse incision at fourchette; scissors passed under fascia of vaginal wall to point near cervix.

Treatment for tight sphincter, fissure in ano, intentional irregularity and undue prolonged straining at stool should be instituted in childhood. Dysmenorrhea, associated with undeveloped and retroverted uteri, should be treated with the idea of correcting, when present, an abnormally deep culdesac of Douglas. This cannot be done without combining with uterine suspension some operative procedure on the sacro-uterine ligaments or on the peritoneum forming the pouch between the vagina and the rectum.

Good obstetrics from the earliest months of pregnancy to the end of the puerperal period is necessary to limit the damage to the sacro-uterine ligaments, caused by such complications as excessive vomiting (especially when associated with retroversion), prolonged settling, overtime labor with large babies, occiput posterior positions, prolonged first and second stage labors, puerperal retroversions, and repeated pregnancies at intervals too short for involution to take place. At one time, I believed the insertion of a cervix bag in long first-stage labors would help to prevent rectocele, but more extensive experience has led me to change some of my ideas in this regard.

To induce labor at term in the multipara, particularly with occiput posterior positions, the Voorhees bag is often of distinct value. But the pull of the bag on a rigid cervix for an unduly long time will tend to injure the ligamenta plicovaginalia and produce rectocele, rather than prevent it. Early correction of posterior positions, version, the Scanzoni maneuver, resort to median episiotomy in delayed second-stage labor, as well as the complete repair of lacerations of the cervix and upper vagina after labor, are of great value in the prophylaxis of rectocele.

But the most perfect postpartum perineorrhaphy will not cure high rectocele. Moreover, the usual procedures advocated for the cure of high rectocele are totally inadequate to meet the situation, and are frequently followed by a recurrence.

Operations for cystocele have a far better prognosis as regards the frequency of recurrence than have operations for the cure of rectocele; while operations for the cure of prolapse of the uterus give the best results and, so far as the uterus is concerned, are followed by the least number of recurrences. For example, in a recent report of a series of sixty-three operations for prolapse of the uterus, associated with rectocele and cystocele, we found, in the women's clinic at Stanford University School of Medicine, nineteen recurrences of the rectocele, nine recurrences of cystocele, and three recurrences of uterine prolapse.[3]

Following the usual types of perineorrhaphy, rectocele will occur in more than 20 per cent. of cases. If rectocele is associated with prolapse of the uterus or develops after vaginal hysterectomy, perineorrhaphy for the cure of the rectocele, even if fairly high, will be followed by a recurrence of the rectocele in 40 per cent. of the cases.

Because of these facts, I have gradually modified and perfected a technic for the cure of rectocele that might be called proctopexy, although, to differentiate it from the older abdominal proctopexy, it would probably better be called colpoproctopexy.

This operation is somewhat similar to that described by Bissell,[4] who overlaps the fascia between the rectum and the vagina, as well as those described by Goldspohn[5] and by Frank,[6] who close the levators high between the rectum and the vagina, but it differs in that the rectum is raised on its transverse axis and sutured

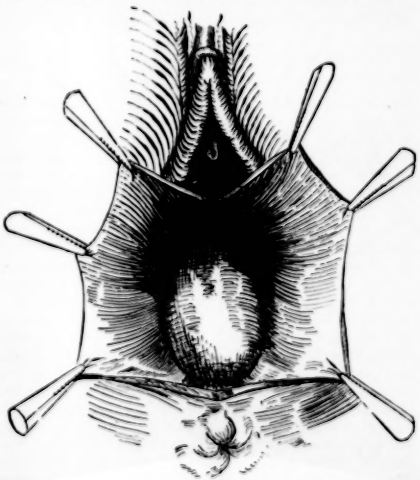

Fig. 2.—Posterior vaginal wall incised from fourchette to cervix, exposing rectum.

3. Spalding, A. B.: California State J. Med. **20**: 2-3 (Jan.) 1922.
4. Bissell, D.: Am. J. Obst. **78**: 1 (July) 1918.
5. Goldspohn, A.: Surg., Gynec. & Obst. **32**: 443 (May) 1921.
6. Frank, R. T.: Surg., Gynec. & Obst. **24**: 42 (Jan.) 1917.

to the pelvic fascia in the neighborhood of the exposed sacro-uterine ligaments; the sacro-uterine ligaments as well as the levator ani muscles then being interposed between the rectum and the vagina. The technic of the operation in brief is as follows:

A cross incision through the vaginal fascia is made at the mucocutaneous junction of the vagina and perineum as in a Tait flap splitting perineorrhaphy. As this flap is held taut by two assistants, blunt pointed scissors are passed between the vaginal fascia and the rectum for a distance of about 6 cm., to a point near the cervix (Fig. 1). By opening the scissors, the vaginal fascia is separated from the rectum and the vaginal wall is then incised in the midline from the fourchette to the pouch of Douglas (Fig. 2). By lifting the upper angle of the incision, the sacro-uterine ligaments are put on tension and, unless the uterus has been removed, can be easily made out. A chromic gut suture is passed through the vaginal wall a short distance from the upper end of the incision, carried free, and passed through the fascial covering of the left side of the rectum at a point that will just take up the slack in the prolapsed bowel. This suture is now passed through the fascia near the left sacro-uterine ligament, crossed over and passed through the fascia near the right sacro-uterine ligament, then carried free to a point on the right side of the rectum opposite the first rectal stitch and up through the vaginal wall opposite the starting point (Fig. 3). If this stitch is carefully drawn taut and tied, the rectum will be raised to the sacro-uterine ligaments, and these ligaments will be sutured together and the upper angle of the vaginal incision closed (Fig. 4). A second similar stitch will cause the herniated rectum to disappear entirely. Sutures now passed through the levator ani muscles and fascia high in the vaginal incision will close the wound to a point usually seen in the ordinary perineorrhaphy. By the excision of the excess vaginal flaps the suturing of the deep layer of the triangular ligament and approximation of the superficial muscles, fascia and skin of the pelvic floor, the operation is completed. The vagina is packed with sterile gauze to prevent deep oozing.

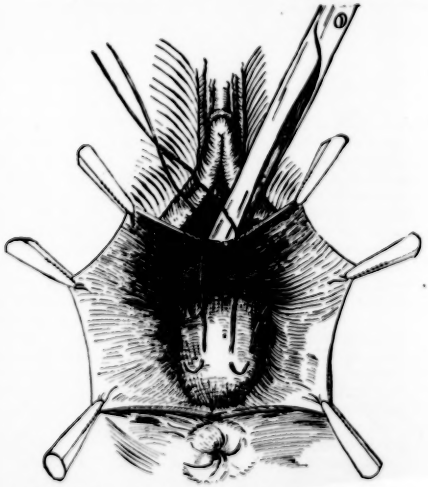

Fig. 3.—First stitch to raise rectum and close sacro-uterine ligaments.

For a study of late results following operations for the cure of rectocele, the histories of 175 patients have been reviewed. One hundred and thirty-one of these patients have been seen and examined in the clinic for periods varying from three months to six and one-half years after operation. The remaining forty-four patients have made at least one visit to the clinic after leaving the hospital, at periods varying from six weeks to three months after operation. With 145 patients in this series, an attempt was made to cure the rectocele by various types of low and high perineorrhaphy. In this group of patients, 131 had cystocele in addition to the rectocele, and fifty-five suffered with complete prolapse of the uterus with rectocele. In the 131 patients having rectocele and cystocele, there were thirty-one recurrences of the rectocele, or 24 per cent. In the fifty-five patients having complete prolapse of the uterus with rectocele, there were twenty-two recurrences of the rectocele, with three recurrences of the prolapse, which gives a 40 per cent. recurrence of the rectocele after perineorrhaphy.

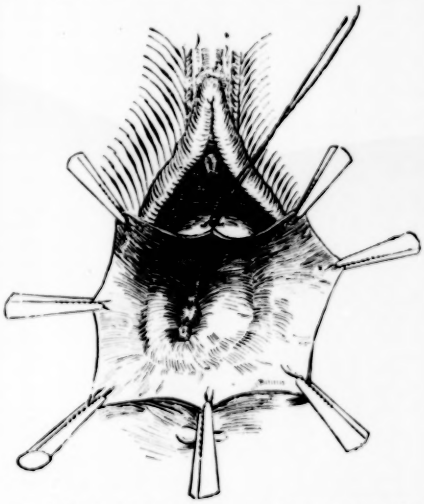

Fig. 4.—Result after tying stitch shown in Figure 3; rectum raised on transverse axis.

During the last three years, thirty-two patients have returned to the clinic a sufficiently long time after proctopexy to give a fair estimate of the relative value of the operation. In this group, twenty-six also had cystocele and ten had complete prolapse of the uterus. In the patients having rectocele and cystocele, there were three recurrences of the rectocele, or 11.5 per cent. In the cases of prolapse of the uterus, there was one recurrence of the rectocele, or 10 per cent., with no recurrence of the prolapse of the uterus.

The 175 patients having perineorrhaphy were operated on by various operators, including the intern staff. A great variety of technics was employed. In the clinic, after operation, the patients were examined by a different group of the staff, and all recurrences of rectocele with the patient straining down were carefully recorded. This method gives an impression as to the value of a particular operation far different

from that usually received when the operator is anxious to overvalue the technic of any particular operation. This method may possibly even exaggerate somewhat the number of recurrences by including some cases of only minimum failure. However, from a comparison of the percentage values obtained in the two series of patients examined by the same methods, it is seen that, in cases of rectocele associated with cystocele, 52 per cent. better results have been obtained with proctopexy than with perineorrhaphy; while, with rectocele associated with prolapse of the uterus, 75 per cent. improvement has been obtained with proctopexy over that obtained with the usual perineorrhaphy.

Stanford University Hospital.

TECHNIC OF REPAIR OF ENTEROCELE (POSTERIOR VAGINAL HERNIA) AND RECTOCELE

AS AN ENTITY, AND WHEN ASSOCIATED WITH PROLAPSE OF THE UTERUS*

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NEW YORK

The subject of this paper is limited to hernias involving the posterior vaginal wall, which we frequently encounter and recognize under the designation of rectocele, and to the much rarer hernia which is made up of the culdesac of Douglas, with its intestinal contents

Fig. 1.—Technic of rectopexy for rectocele: The vagina is separated from the rectum with scissors; the dissection extends well above the line marked for the excision of the vaginal wall.

dissecting its way downward between the posterior vaginal wall and the rectum, known as vaginal enterocele or posterior vaginal hernia.

The common condition of rectocele is the result of impairment of the function of the pelvic floor (the inability to properly close the vaginal mouth), due to injury in childbirth, thus allowing the vaginal wall to roll downward and outward with the attached rectum.

Fig. 2.—Technic of rectopexy for rectocele: The rectopexy suture that is to draw up the rectal pouch to the upper undamaged part of the vagina is in place.

This anatomic change in the relation of the parts alters the normal mechanism of defecation, the direction of the fecal current being changed so that the anterior rectal wall and the posterior vaginal wall receive the brunt of the strain and, consequently, protrude more and more until a distinct rectal pouch is formed, which renders complete emptying of the rectum difficult. In cases in which the fascial support of the vaginal wall has been torn or is attenuated, the rectocele may develop to a large size, with resulting aggravation of symptoms.

The usual methods in vogue for curing this hernia are based on the principle of either denudation of the posterior vaginal tissue and approximation of the cut edges or resection of the excess vaginal wall with plication of the bowel. The result, so far as the bowel is concerned, is to throw it into folds, which must tend to be smoothed out by the daily passage of fecal masses, especially if constipation exists. In all these operations, a perineorrhaphy is relied on to close the vaginal orifice and thus prevent further descensus of the vaginal walls. In the majority of cases with a small or moderate sized rectocele, these methods are satisfactory in their results, the so-called "interposition" or levator muscle operation being superior to the typical Emmet, in my opinion, so far as the rectocele is concerned.

In large rectoceles, however, the usual operative procedures do not give as perfect a permanent result as is desired. For the last twelve years, I have been employing the principle in curing rectocele that is so successful in cystocele when the bladder is separated

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

from its vaginal and uterine attachments and carried to a higher position, as in the technic of Goffe. I published a report of the operation in 1913.[1]

The operation consists, first, in completely separating the rectum from the posterior vaginal wall as far up as the culdesac of Douglas, and then sliding

Fig. 3.—Technic of rectopexy for rectocele: The excess vaginal wall is cut away along the line previously outlined, the edges are united by interrupted sutures, and the perineorrhaphy is completed with an approximation of the levators and a subcuticular skin suture.

the loosened rectal pouch high up along the vaginal wall by means of a suture. Thus, the denuded rectum is carried up and placed so as to adhere strongly to the upper undamaged third of the posterior vagina, which is above the former site of the rectocele. The pouched part of the vaginal wall which entered into the formation of the rectocele is then cut away, and the operation completed by a perineorrhaphy, in which the pubococcygeal portion of the levators are exposed and approximated in front of the rectum, thus making a strong barrier to further descent. An extensive experience with this technic in many hundreds of cases in my hands has proved the soundness of the principle employed and has been uniformly successful in permanently relieving these patients of their symptoms.

Bissell has applied the principle of fascia lapping in the cure of this condition. My objection to this technic is that the normal balloon shape of the vagina is liable to be changed by it, the upper vagina being considerably reduced in size, and that it is too complicated and time consuming, although the results Bissell has obtained are excellent.[2]

Posterior vaginal hernia, or "enterocele," has been considered a very rare condition, and the textbooks either ignore it entirely or give but a few lines calling attention to its infrequency. Likewise, a search of the literature shows that very few cases are recorded. Sir Astley Cooper, in his classic work on hernia, in 1804, published an illustration of an undoubted case. Fordyce Barker and T. Gaillard Thomas have reported cases, and, in 1916, Hartman[3] of Paris published a typical case, with the technic he employed for its cure from below. The most recent report I have been able to find was made by Sweetser,[4] in 1919, illustrative of the extreme type in a nulliparous woman.

The rarity of this condition is undoubtedly due to the obliquity of the pelvic cavity in the erect posture, the intra-abdominal pressure thus being deflected forward, and to the very strong pelvic and rectovesical fasciae whose fibers are intimately interwoven with the walls of the canals passing through the pelvic floor. Moschcowitz[5] calls attention to the fact that this fascia has a funnel shape attachment to the rectum and that a defect here will allow the intestine to push through along the rectal wall to the levators, pushing the peritoneal lining of the culdesac ahead of it. Such a congenital defect in the fascial attachments would, therefore, account for such condition in a virgin. Pregnancy and labor causing stretching or separation of the fibers of the fascia would account for the acquired form.

My interest in this subject has been aroused during the last four years as a result of encountering partially satisfactory results in several cases of prolapse of the uterus in which I had employed the Mayo technic of vaginal hysterectomy and the interposing of the united broad ligaments under the bladder. While the cure of

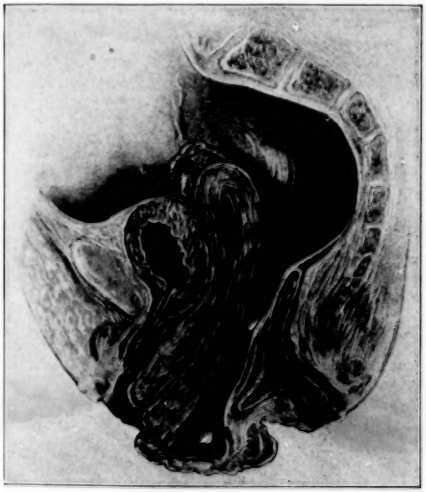


Fig. 4.—Enterocele: Frozen section from Halban and Tandler, demonstrating the relation of a deep culdesac of Douglas to prolapsus. The pouch filled with intestine exerts traction on the cervix.

the prolapsed bladder and anterior vaginal wall was all that could be desired, a well marked enterocele protruded from the vulva orifice in these cases, necessi-

1. Ward, G. G., Jr.: Surg., Gynec. & Obst., September, 1913, p. 361.
2. Bissell, Dougal: Tr. Am. Gynec. Soc. **43**: 157, 1918.
3. Hartman, H.: Ann. de gynéc. et d'obst. **12**: 351 (Nov.-Dec.) 1916.
4. Sweetser, H. B.: Ann. Surg. **69**: 609 (June) 1919.
5. Moschcowitz, A. V.: Surg., Gynec. & Obst., July, 1912.

tating a second operation to establish a cure. A careful study of the culdesac of Douglas in all cases of prolapse of the uterus during this period has convinced me that an enterocele, either beginning or well developed, is present in a far larger proportion of these cases than we have realized, and that it is necessary to recognize

Fig. 5.—Enterocele: line of incision.

and meet this condition with an appropriate technic at the time of the operation for the cure of the prolapse of the uterus, in order to prevent a certain proportion of partially satisfactory results. I am also convinced that enterocele (of the lesser types) without prolapse of the uterus is more frequent than we formerly believed, and that it is frequently overlooked and classed as a rectocele, both conditions being frequently present. The differential diagnosis with the finger in the rectum is easily made but not often employed. In the past four years at the Woman's Hospital, I have had occasion to operate on fourteen patients having abnormally deep culdesacs, with and without an associated uterine prolapse. Of these fourteen patients, three required a second operation because of my failure to appreciate the importance of investigating the depth of the culdesac at the time of the original operation. Zuckerkandl, Freund and others have shown that the culdesac of Douglas normally extends to the levators in the fetus and that its depth gradually decreases from this time until puberty, when it reaches the level of the second or third sacral vertebra. Daniel Jones [6] of Boston has pointed out that a deep culdesac is an important factor in favoring or producing prolapse of the uterus, and he states that downward pressure made in the culdesac against the posterior vaginal wall will demonstrate a strong pull on the uterus. He advocates the closure of the culdesac on this account. Jones believes that this accounts for uterine prolapse in virgins, as these patients always have a deep posterior culdesac of congenital type.

6. Jones, D. F.: Boston M. & S. J. **175**: 623 (Nov. 2) 1916.

The value of the technic of Moschcowitz for the cure of prolapse of the rectum lies in the fact that the closure of the Douglas pouch throws the weight of the intestines forward onto the bladder, symphysis and anterior abdominal wall, with the patient in the erect posture; while a deep culdesac allows the weight of the intestines and the pressure to come on the anterior rectal and posterior vaginal wall.

In view of my experience and in the light of the foregoing statements, it is now my custom to obliterate the pouch of Douglas by the vaginal or abdominal route, as part of the technic in all cases of operation for prolapse of the uterus. In cases of enterocele without uterine prolapse, the posterior vaginal wall is opened in the midline for its entire length, and the peritoneal sac of Douglas is dissected free up to the uterosacral ligaments. A sponge stick in the rectum serves as a useful guide. The sac is ligated and cut off, and the uterosacral ligaments are united with interrupted Pagenstecher linen sutures as close to the rectum as possible. The denuded space is obliterated with continuous buried catgut sutures, and the vagina is closed in the usual manner. In cases associated with prolapse of the uterus, in which the Mayo technic is employed, the obliteration of the culdesac is easily accomplished after the uterus has been cut away from the broad ligaments. A finger in the pouch demonstrates its exact location and a median vaginal incision exposes the sac so that it can easily be dissected out, up to the region

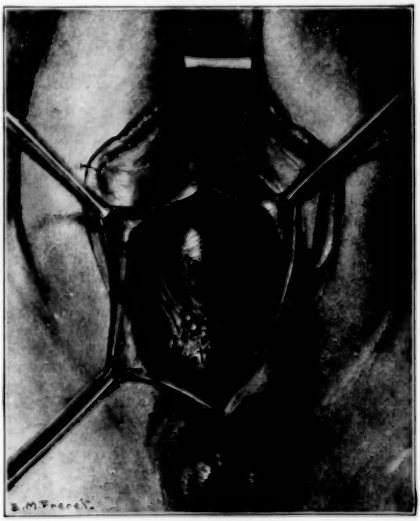


Fig. 6.—Enterocele: the enterocele exposed and its relation to the rectocele.

of the uterosacral ligaments, where it is closed by a suture and cut off. The uterosacral ligaments are then united with linen sutures and the denuded space closed with continuous buried catgut sutures. After the culdesac is obliterated in this manner, the broad ligaments are sutured together and interposed beneath the bladder in the usual way, and a perineorrhaphy completes the

operation. The obliteration of the culdesac can be accomplished in a similar manner from above if an abdominal operation is indicated.

CONCLUSIONS

1. In large rectoceles, the usual operative technic of Emmet or Hegar does not give a permanent satisfactory result.

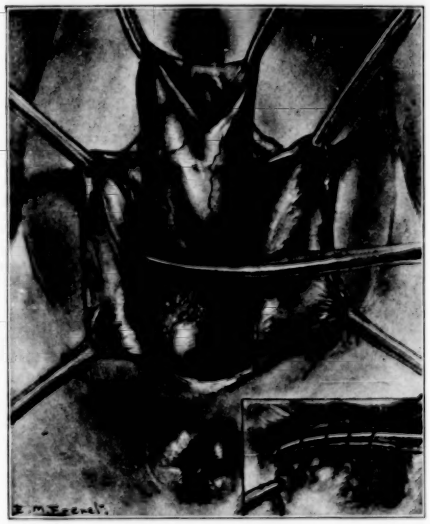


Fig. 7.—Enterocele: The peritoneal pouch of Douglas is dissected out, opened, clamped and ligated.

2. In these cases, a technic may be employed which insures a cure by treating the rectocele as a hernia and anchoring the rectal pouch in a higher position on the undamaged portion of the vaginal wall, where the fascial supports of the canal are intact.

3. Posterior vaginal hernias, or "enterocele," while rare in the extreme types, are far more frequent in the lesser degrees than is usually realized.

4. A deep culdesac of Douglas may be congenital or acquired, and is an important factor in the cause of uterine prolapse.

5. It is frequently not recognized in many cases of prolapse of the uterus, and the failure to correct it is a common cause of unsatisfactory operative results.

6. The technic of the obliteration of the pouch of Douglas by the vaginal or abdominal route is not difficult, and it should be a part of the procedure in operations for uterine prolapse.

48 East Fifty-Second Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. NEEL, SPALDING AND WARD

DR. T. J. WATKINS, Chicago: Dr. Spalding and Dr. Ward have given us some new and important ideas relative to treatment of high rectoceles. These have been difficult to remedy, and it is to be hoped that better results may be obtained from utilizing their operative suggestions. Dr. Neel's illustrations do not show sufficient elevation of the bladder to obtain desirable results. In conversation with him I have learned that he also believes in more bladder elevation than his illustrations show. Cystocele is a sliding hernia. After separation of the vaginal wall from the underlying fascia, and after separation of the bladder from the cervix, the sliding hernia can be as distinctly demonstrated as any case of a sliding inguinal hernia. The principle of repair is also the same. The hernia canal can be closed by suture of the fascia to the cervix or lower uterine segment as is needed in the individual case, or the opening may be closed by transposing the body of the uterus. In the closure, it is extremely important to suture the fascia so that the urethra will be retracted and fixed in its normal location, which is one of relative fixation; otherwise the incontinence will not be entirely relieved. In the fixation of the fascia, it is also important to obtain proper bladder elevation; otherwise the urethra may be retracted away from the pubes and would fail to relieve the incontinence.

DR. C. H. MCGEE, Burlington, Iowa: In regard to some of the slides we saw on the screen, while they may be made to instruct, at the same time they may be made so as to lead us into error. I would advise Dr. Neal to do a thorough dissection of the pelvic fascia before he comes before an audience again, and I would advise him then to destroy one of those pictures which showed the pelvic fascia so beautifully. One of his remarks was that the abdominal fascia was continuous with the pelvic fascia. That is not so. The fascia lining the abdominal cavity in front is called the transversalis fascia, and that does not connect with the pelvic fascia at all. The fascia covering the iliacus muscle is called the iliac fascia. It may or may not connect with the posterior fascia for about half an inch. Cunningham says that once in a while it does. In regard to those figures, all we need is a nimble hand and a lively imagination, and we can put

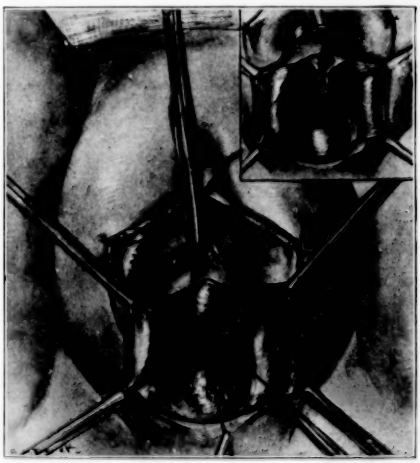


Fig. 8.—Enterocele with uterus retained: The uterosacral ligaments are united with interrupted linen sutures, closing the entrance to the culdesac, and continuous catgut sutures obliterate the space.

things up in great shape. In regard to his overlapping this fascia, it is not like muscle structure, constant. The superficial layer of the deep fascia of the neck, where it comes forward from the trapezius, splits to enclose the sternocleidomastoid. Sometimes one will find a dense anterior layer, and sometimes it is almost absent. It is the same way with the pelvic fascia. It is not a constant structure. I have dissected nulliparous women and could scarcely find the dif-

ferent layers of fascia of the pelvis. If a careful dissector cannot find it in a nulliparous woman, how can one find it so readily when dilatation (or tearing) has taken place and the fascia has been attenuated for eight, ten or twelve years?

DR. ALBERT GOLDSPOHN, Chicago: The statement of the last speaker I wish to deny; and I endorse the position taken by Dr. Neal, that the fascia referred to exists. It extends downward from the pelvic walls and covers the levator ani muscle on the visceral side. Gray calls it the rectovesical fascia. It is often injured by childbirth, as Dr. Spalding sets forth, and

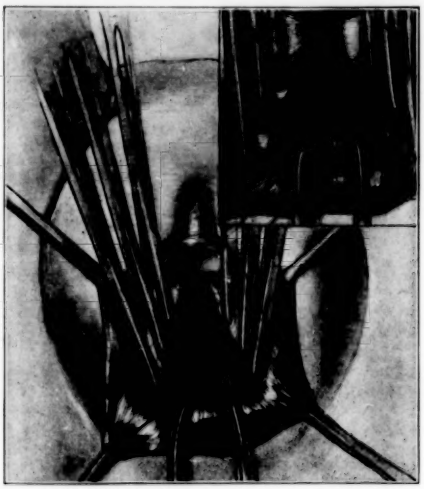


Fig. 9.—Enterocele with uterus removed: The clamps are on the broad ligaments, and interrupted linen sutures unite the uterosacral ligaments after the removal of the peritoneal pouch of Douglas.

he labors correctly to restore it. An extension of it reenforces the anterior vaginal wall, from which Dr. Neal separates it in his restorative operation. In this I differ from him in not making such a separation, and then using the two weakened structures separately in the restorative technic. I believe that unitedly they serve a better purpose; by simply removing the vaginal mucous membrane from one side and sliding it into the wound of the opposite side, a firmer result is obtained more quickly and with less loss of blood. I am pleased with the anatomically correct procedures advocated by Dr. Spalding and Dr. Ward. For the more severe forms of injuries of the pelvic floor, of which they speak, they probably do not extend their operative wound and raise the posterior vaginal wall much farther inward than I have been accustomed to do even for less severe injuries of those parts, in the operation of which I have performed for many years and have been trying to induce the profession to adopt. To the wound that I ordinarily make, I can readily add the rectum-elevating suture which Dr. Ward advises, in those cases in which it is needed.

DR. JOHN F. HERRICK, Ottumwa, Iowa: During the summer of 1916 I prepared a paper on this particular subject. Before the paper was read, a paper appeared by Gibbon Fitzgibbon of Dublin, Ireland, describing very minutely the fascia mentioned today, and the operation for cystocele. I had been doing the operation for some time, with this difference: I had split the vaginal wall, separated the fascia, left it in contact with the mucous membrane, and drawn the fascia and mucous membrane together across and united them; and I must say, as the author has said, that of all operations that I have done or seen done for the condition described, there is nothing that compares with the results obtained in the operation described here. As to the presence of that fascia, Dr. McGee and I have differed for some time. I knew what he would say. However, if one remembers, in looking down into the pelvis, in the normal condition, one will see in the female the bladder lying in front, the uterus fixed on a point, or pivot. The cervix moves below, the body above. That is the point of contact of this fascia. Now, there are really two planes of fascia: one on the floor of the pelvis covering the levator ani that holds the rectum, and this one above that acts as a sling attached to the fifth sacral vertebra, and around the white line to the pubis in front, perforated by the urethra in front, by the cervix part way back, and by the rectum near the posterior wall. If there is a separation of the fibers of that fascia, one can easily see how one or all of those can sink down and pass out through the pelvic opening. What must be done is to get hold of the fascia and lift the organs up; the bladder should be elevated, as was illustrated, and the fascia brought together tightly; this will cure acute procidentia, recocele, cystocele and incontinence of urine.

DR. J. CRAIG NEEL, San Francisco: It is very gratifying to know that there is but one "doubting Thomas" among those present. I have neither the time nor the inclination to enter on any argument regarding the presence of this fascia, but would refer the speaker to any standard work on anatomy. Dr. Watkins brought out a very important point regarding the reduction of the displaced bladder. The best results will be attained if the bladder is carried well up to the pelvic bones. The one-sided dissection of which Dr. Goldspohn spoke is simply another method of arriving at the same end. I am glad to know this method has given such excellent results. The point which I wish to emphasize is, first, the presence of this fascia, and, secondly, the importance of utilizing it in the treatment of cystocele.

DR. ALFRED BAKER SPALDING, San Francisco: I should like to have Dr. McGee visit us in San Francisco. I have all these things on platters in my laboratory, and I think if he should see them there he would see that we are not trying to call anything either false or foolish.

CARBON DIOXID GAS INFLATION

AS A MEANS OF DETERMINING THE CAUSES OF STERILITY IN WOMEN *

ROLAND S. CRON, M.D.

ANN ARBOR, MICH.

Credit should be given Rubin [1] for the idea that the patency or nonpatency of the fallopian tubes may be safely determined by the passage of gas under pressure through the tubes. Soon after the publication of Rubin's paper in 1920, Dr. Peterson [2] began the extensive use of Rubin's test, combined with stereoscopic roentgenography of the pelvic organs, in the department of obstetrics and gynecology at the University of Michigan. I have been a member of Dr. Peterson's staff throughout the time that transuterine and trans-

* From the Department of Obstetrics and Gynecology, University of Michigan Medical School.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Rubin, I. C.: A Manometer and Flow-Volumeter for Transuterine Peritoneal Inflation to Determine the Patency of the Fallopian Tubes in Cases of Sterility, Am. J. Roentgenol. **8**: 459 (Aug.) 1921; Nonoperative Determination of the Patency of the Fallopian Tubes by Means of Intra-Uterine Inflation with Oxygen and the Production of Artificial Pneumoperitoneum, J. A. M. A. **75**: 661 (Sept. 4) 1920; Nonoperative Determination of the Patency of the Fallopian Tubes in Sterility with Intra-Uterine Inflation with Oxygen and the Production of an Artificial Pneumoperitoneum, ibid. **74**: 1017 (April 10) 1920.

2. Peterson, Reuben: Pneumoperitoneum and Roentgenology as Aids to More Accurate Obstetric and Gynecologic Diagnosis, Am. J. Obst. & Gynec. **2**: 349 (Oct.) 1921; The Value of Pneumoperitoneal Roentgenography in Obstetrics and Gynecology, J. A. M. A. **78**: 397-400 (Feb. 11) 1922. Van Zwaluwenburg, J. G., and Peterson, Reuben: Pneumoperitoneum of the Pelvis, Am. J. Roentgenol. **8**: 12-19 (Jan.) 1921.

abdominal gas inflation has been tried and the methods have been improved. I have seen pelvic gas inflation, at first attempted with extreme caution for fear of resulting peritonitis, developed until it has become a part of the routine of the clinic and used with every confidence that no injury will result to the patient. I am indebted to Dr. Peterson for the opportunity to summarize the results obtained in the clinic from the use of this method. Although in its infancy, the procedure bids fair to play an important part in

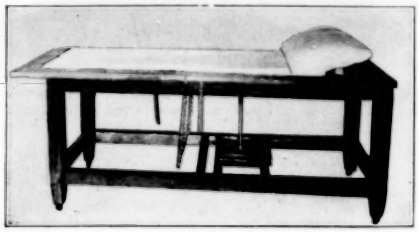


Fig. 1.—Table used for gas inflation and roentgenography.

determining certain anatomic causes of sterility, thus placing attempts at the cure of the condition on a more scientific basis.

It was early recognized that this method of diagnosis, to be universally adopted, should be free from danger and accompanied by a minimum amount of distress to the patient. Furthermore, it was realized that the technic had to be simple. The first prerequisite, freedom from danger, has been definitely settled by the fact that in more than 400 inflations in the university clinic there have been no casualties. The second prerequisite, the reduction of discomfort to a minimum, has been accomplished by the substitution of carbon dioxid for oxygen gas. The former is more rapidly absorbed, and its safety has been established beyond question, experimentally by Alvarez [3] and by Ribadeau-Duma and Mallet,[4] and clinically by the results in several hundred cases in this clinic. The third prerequisite, simplicity, will be dwelt on at length when the method of procedure is detailed.

From the 400 cases in which inflation was performed with carbon dioxid in the clinic it has been possible to collect seventy-five cases of sterility. Sixty women, or 80 per cent., were primarily sterile, while fifteen, or 20 per cent., had been pregnant some time during their early married life but at the time of seeking treatment were unable to conceive. The latter group has been classified as secondarily sterile. The average age of the entire group of women was 30 years, and the majority of the women had not been pregnant for at least seven years.

The method of procedure in arriving at a diagnosis in these cases has been that of taking a detailed history, stressing particularly the menstrual, puerperal and venereal history. When possible, the husband's fertility has also been determined. This is then followed by a general physical and a careful and detailed bimanual and rectovaginal examination, combined with a speculum examination of the cervix and a testing of the vaginal secretions. After this, a transuterine and if necessary a transabdominal inflation is done.

Peterson has recently described the apparatus for both transuterine and transabdominal inflation used in the clinic. Briefly, it consists of a tank of carbon dioxid with a pressure reducing and needle valve to control the outflow of gas, an inverted 25 c.c. siphon flow meter to measure the amount of gas passing into the peritoneal cavity, a mercury or spring manometer to gage the pressure at which the gas is entering the uterus, a Keyes-Ultzman metal uterine cannula with rubber stopper to introduce the gas into the uterus and prevent its regurgitation into the vagina, and a lumbar puncture needle for transabdominal inflation. Sterile rubber gloves, sterile towels and iodin or picric acid are used as in any surgical procedure.

The transuterine inflation is obviously the one in routine use for the determination of the patency of the tubes. The Sims has been found preferable to the lithotomy position, because of the ready accessibility of the cervix and the greater convenience of placing the patient in the dorsal or the modified knee-chest position. The cervix is exposed by the introduction of a Sims speculum and grasped with double tenaculum forceps after it and adjacent parts of the vagina have been sterilized with iodin or picric acid. The latter antiseptic is now being used because of its bland and nonirritating effect on the vaginal mucous membrane. The direction of the uterine canal is determined, and the intra-uterine cannula with rubber stopper introduced. Instead of the hard rubber urethral stopper, it has been found that a softer and more pliable one will prevent the regurgitation of the gas more effectively. Traction must be made on the tenaculum so that a snug fit is made with the cervix and rubber stopper. Permeability of the cannula must have been established before proceeding with the inflation.

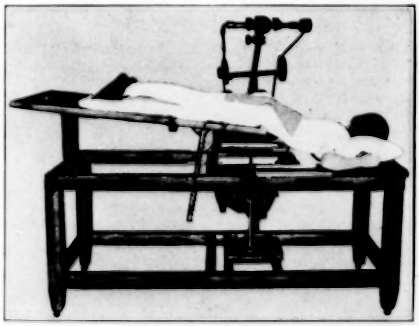


Fig. 2.—Patient in correct (modified knee-chest) position for the taking of roentgenograms.

For the transuterine inflation, the pressure reducing valve must be set in order that the escaping gas from the tank exerts a pressure of at least 15 pounds. This is sufficient to raise the column of mercury to 200 mm. when the outflow of gas is obstructed. The flow through the siphon meter should not exceed six pulsations a minute with the outflow of gas unobstructed. If the rate is more rapid than this, the manometer will occasionally register 200 mm. of mercury (the safety

3. Alvarez, W. C.: The Use of Carbon Dioxid in Pneumoperitoneum, Am. J. Roentgenol. **8**:71 (Feb.) 1921.
4. Ribadeau-Duma and Mallet: Carbon Dioxid for Pneumoperitoneum, Bull. et mém. Soc. méd. d. hôp. de Paris **45**:235 (Feb. 18) 1921.

V. 19

point) even though gas is entering the pelvis through the tubes. There are cases of partially obstructed tubes or tube in which it is necessary to reduce the flow to from two to four pulsations a minute before the manometer indicates the patency of the tubes. The highest pressure permissible we have found by clinical

Fig. 3.—Chronic bilateral salpingitis; right hydrosalpinx; patent left tube.

experience is 200 mm. of mercury. Anything higher than that may rupture an obstructed tube and lead to serious complications.

As many as twelve consecutive attempts at a pressure of 200 mm. of mercury in a single case have been made to force the gas through the tubes. In the majority of cases, however, it enters during the first attempt; but it has occasionally passed only after seven or eight trials. The average number of attempts made to pass the gas has been six before the transabdominal method was resorted to. Once, however, the gas has established a pathway, the mercury column drops from 20 to 100 mm. The usual pressure at which the gas enters is between 40 and 80 mm. of mercury. It is not necessary to use the fluoroscope for the determination of the establishment of a pneumoperitoneum. The criteria on which this diagnosis is based are: (1) a manometer reading below 200 mm. of mercury when there is no regurgitation of gas as evidenced by lack of sizzling or gurgling in the vagina; (2) pain or distress in both lower quadrants and later in one or both shoulders, especially when the patient is placed in the sitting posture; (3) peritoneal irritation, as elicited by nausea or vomiting; (4) increase in abdominal tympany, and (5) auscultation of the lower abdomen with the stethoscope. The average amount of gas necessary for the determination of these criteria has been 300 c.c., or twelve pulsations of the siphon meter. Because of the rapid absorption of carbon dioxid, all of these patients leave the clinic ten or fifteen minutes after the test.

If there is any obstruction to the inflow as demonstrated by the gas entering only after repeated attempts or at a pressure over 150 mm. of mercury; if it does not enter at all, or if there is any question as to the condition of the pelvic organs, from 800 to 900 c.c. of gas is introduced by the transuterine or transabdominal route, and stereoscopic roentgenograms are taken. The technic of transabdominal inflation and the roentgenographic work have been most carefully detailed by Dr. Peterson. Further simplification of this end of the work has been accomplished by the employment of a table used both for the inflation and pelycography.

Just as in any other surgical or diagnostic procedure, there are certain contraindications to the injection of gas through the uterus and tubes. Naturally, in the presence of a profuse purulent or bloody uterine or vaginal discharge, this method of inflation should be abandoned and the transabdominal substituted. Acute pelvic inflammatory processes should not be subjected to irritation and separation of the plastic exudate by forceful introduction of gas. Persons with serious organic cardiac disease, hypertension, or large abdominal tumors should not be subjected to large quantities of gas because of the possibility of upsetting the vasomotor system. Pyrexia is usually a contraindication. In women with a very unstable nervous system and rigid perineum who object strenuously to intrapelvic manipulations, inflation can be effected under the influence of nitrous oxid anesthesia. Judgment must be used in the selection of these cases, just as in any other surgical procedure.

The seventy-five cases of sterility were divided into two groups: Group 1, in which the tubes were patent, and Group 2, in which they were nonpatent. In Group 1 there were thirty-four cases, or 45 per cent. of the entire number. The gas in these cases passed through the tubes either freely or under a high pressure. In Group 2 there were forty-one cases, or 55 per cent. of the entire number. The gas in these cases could not

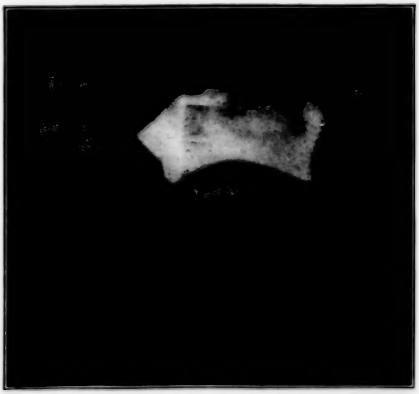


Fig. 4.—Bilateral salpingitis; adhesions on left; patent tubes. Gas introduced on fifth attempt under pressure of 180 mm. of mercury. Bimanual examination revealed only slight left salpingitis.

be forced through the tubes even under a high pressure. For the sake of simplicity and because of the fact that the percentage of patent and nonpatent tubes in cases of primary and secondary sterility is approximately the same, the seventy-five cases will not be further considered according to that classification.

An analysis of the thirty-four cases of Group 1 reveals the fact that bimanual examination does not give satisfactory evidence of the true condition of the lumina of the tubes. In twenty cases, or 60 per cent., the tubes, ovaries and fundus of the uterus were correctly diagnosed as normal. The remaining fourteen patients, although having patent tubes, showed a definite pathologic condition within the pelvis. Seven of these patients had mild bilateral inflammation of the tubes and ovaries. In addition, two of these cases were further complicated by retroversion and a third by an acute anteflexion. The other seven cases were diagnosed as (1) unilateral salpingo-oophoritis with appendicitis, (2) right salpingo-oophorectomy with left salpingo-oophoritis, (3) infantile uterus, (4) complete retroversion, (5) maldeveloped ovaries, (6) adenomyoma and (7) bilateral prolapsed, adherent ovaries. Judging from these findings, it is quite evident that, even in the presence of considerable palpable disease of the pelvic organs, the tubes may still be open.

With the exception of seven of the thirty-four patients with patent tubes, a suggestive cause for the sterility was found. Chronic salpingitis or oophoritis, either unilateral or bilateral, was the important factor in twelve cases. Profuse acid leukorrhea, with or without endometritis, endocervicitis and occasionally cervical polypi made up the second largest group. The remaining seven cases were complicated by three retroversions and one each of general fibrosis uteri, infantile uterus, maldeveloped ovaries and adenomyoma. It was impossible in the seven cases excepted to examine after coitus the husband's secretions deposited in the vagina. He may have been responsible for the suspected sterility.

Fig. 5.—Bilateral tubo-ovarian disease with closed tubes, correctly diagnosed by bimanual examination missed during posterior colpotomy.

A comparison of the accuracy of bimanual and roentgen-ray examination of the cases belonging to Group 1 immediately impresses one with the great value of this new method of diagnosis. Sufficient gas was passed through the tubes in twenty-three cases to permit the taking of stereoscopic plates of the pelvic organs. The bimanual and roentgen-ray examination agreed in eight instances, while in nine the diagnosis without roentgenography was partially correct, and in five it was incorrect. A much higher percentage of correct diagnoses was obtained, however, by roentgenography, for all of those included under partially correct and incorrect by bimanual examination were accurately diagnosed by the latter method. Roentgenography in only one case was incorrect, and in another sufficient gas was not introduced to demonstrate the pelvic organs. Only four of these patients were operated on, but in all four the operative findings confirmed the roentgen-ray report.

The gas in fourteen cases of Group 1 was forced through the tubes at a pressure of between 150 and 200 mm. of mercury. In all but three, a definite pathologic condition within the pelvis was discovered by bimanual and roentgen-ray examination. It was necessary in these eleven cases to make from three to six attempts to pass the gas before any entered the pelvis. The most common lesion acting as an obstruction was that of a mild unilateral or bilateral salpingitis. Submucous fibroids and complete retroversion with prolapse of the appendages were similar offenders. In comparison with the cases diagnosed as normal pelves by bimanual and roentgenographic examination, the gas in all but one entered at a pressure below 150 mm. of mercury. In the one exception, the gas passed during the first attempt at a pressure of 170 mm. of mercury. The rate of flow, however, exceeded six pulsations a minute, and accordingly accounts for the high pressure. It is our opinion that when the gas passes through the tubes at a high pressure and then only after frequent attempts, there is some pathologic condition obstructing its inflow.

The analysis of the forty-one cases belonging to Group 2 revealed that a definite pathologic condition of the pelvic organs was much more common than in Group 1. In thirty-one cases, or 76 per cent., bimanual examination demonstrated some disease of the pelvic organs, while in the remaining ten cases, or 24 per cent., nothing abnormal was felt. In the majority of cases the condition diagnosed was that of an inflammation of the tubes and ovaries.

In all but three of these forty-one cases, four, and occasionally as many as twelve, attempts were made to force the gas through the tubes at a pressure of at least 200 mm. of mercury. It was impossible in one case to introduce the cannula because of a multinodular submucous fibroid. Two others were unsuccessful because of rigid and spastic internal os, one of these being further complicated by a maldeveloped uterus. In two cases, at the time of operation the gas was forced through by breaking down adhesions of the fimbriae of a tube, one at a pressure of 210 and the other at a pressure of 300 mm. of mercury.

The value of roentgenography is even more striking in the cases with closed tubes. Of the forty-one cases in this group, thirty-four, or 85 per cent., showed by roentgenograms a pathologic condition of the pelvic organs. This is 7 per cent. higher than was demonstrated by bimanual examination. In ten cases, in which the pelvis was diagnosed as normal by bimanual examination, roentgenography revealed a pathologic condition in five. Therefore, diagnosis in questionable cases with the aid of the roentgen ray, so far as this series is concerned, is twice as accurate as it is without this valuable adjunct. Two plates were technically unsatisfactory, and in one case inflation could not be performed. Ten of the thirty-eight cases with satisfactory films showed adhesions, thickening or enlarge-

ment of the appendages which could not be felt by the examining finger. In eleven other cases, more extensive involvement was diagnosed by roentgenography than had been found by bimanual examination. Sixteen times the bimanual and roentgen-ray examination agreed. Once the roentgenograms were incorrectly interpreted. There were diagnosed by roentgenography nineteen cases of bilateral salpingo-oophoritis, six of unilateral salpingitis or salpingo-oophoritis, four uterine fibroids, two retroversions with unilateral salpingitis, and two of unilateral salpingitis with the opposite tube and ovary removed. The fifteen patients of this group operated on confirmed absolutely the roentgen-ray findings.

Again and again roentgenography has been called on to establish the extent of involvement in a given pelvis. Those women with thick and resistant abdominal walls with a minimal amount of abnormality in the pelvis can usually undergo inflation and be roentgenographed, and a satisfactory opinion expressed as to the condition of the intrapelvic organs. Formerly this type of case was either not correctly diagnosed, or the patient was subjected to an ether examination or commonly to an exploratory laparotomy.

The possibility of a therapeutic use to which transuterine inflation may be put is well illustrated by the report of this unusual case:

A robust, healthy, American woman, aged 29, who had been married three and one-half years, sought advice because of an inability to become pregnant. Her entire history was negative, as was also the general and pelvic examination. Examination of the vaginal and cervical secretions one hour after coitus revealed active spermatozoa. October 24, a transuterine inflation was performed. During the first four attempts to introduce the gas, the pressure rose to 200 mm. of mercury without any gas passing through the tubes. On the fifth attempt, gas entered at a pressure of 180 mm. of mercury. In November there was one normal menstrual period, but there have been none since. She is at present about five months pregnant.

Fig. 6.—Bilateral tuberculous salpingitis with closed tubes. No pathologic condition was detected on bimanual examination. Roentgenography revealed extensive pelvic peritonitis.

This seems to be an excellent example of what the future may hold for women with tubes closed or constricted by mild thickening or light adhesions when subjected to transuterine inflation. It is quite plausible to suppose that the gas separated the fimbriae of a tube or tubes, or at least opened the lumen sufficiently to permit the passage of an ovum down the tube. Certainly, in the case reported it brought about conception in an otherwise sterile woman. It occurs to me that this method of introduction of gas might be used in conjunction and following salpingostomy, implantation of a tube or release of adhesions in an attempt to maintain a pathway between the ovary and the uterine canal.

CONCLUSIONS

1. Transuterine and transabdominal carbon dioxid gas inflation for diagnostic purposes can be safely used.

2. Transuterine inflation will reveal the patency or nonpatency of the fallopian tubes.

3. Bimanual examination is not sufficiently accurate to diagnose correctly the true condition of the lumina of the tubes.

4. Manometer readings of more than 150 mm. of mercury during transuterine inflations usually signify obstruction to the inflow of gas through the tubes, most commonly due to a salpingitis. This interpretation should be especially so considered if the gas enters only after repeated attempts.

5. More than 50 per cent. of the sterile patients had closed tubes, a higher percentage than is usually credited to this factor.

6. Stereoscopic roentgenography of the pelvic organs is more accurate than bimanual examination. Especially is this true in those cases in which palpation is unsatisfactory.

7. Fallopian tubes with constricted or obstructed lumina at either the proximal or the distal end may be dilated sufficiently by the gas to permit the passage of an ovum.

ABSTRACT OF DISCUSSION

DR. GEORGE GRAY WARD, JR., New York: In the Woman's Hospital in New York we have used the method in about 300 cases, and no bad results have been noted; that is, no results caused by infection, that in any way would mitigate against it. But the indications for its use, of course, must be borne in mind. We have eliminated the use of the fluoroscope to locate the bubble of gas because we consider that the shoulder pain is positive evidence that the gas has gone through the tubes. The absence of permeability, however, is not 100 per cent. evidence that the tubes are closed. We have endeavored to check up by operation, wherever we had the opportunity, as to the condition of the tubes when they were apparently obstructed, and found in several cases that the tubes were apparently perfectly normal, and yet after repeated attempts at getting the gas through with a 200 mm. pressure, we felt that they were closed, and made such a diagnosis. It is to be borne in mind, however, that those tubes, while they were apparently normal to our view and touch at the operation, may possibly have had an obstruction in the horn of the uterus, which, of course, is impossible for us to be certain about, without opening the uterus. Also, there may be certain cases that do not allow the passage of the gas in which there are numerous convolutions in the tube which are present in the infantile type of tube and which have not been eliminated during the development at puberty. The value of the method may be shown in a case of absolute obstruction in a young woman very desirous of having children. I found both tubes occluded at the uterine end. The remainder of the tubes was normal. The method of Dr. Rubin enabled us to make a positive statement to the patient that her tubes were occluded, although we could not palpate the obstruction. The method is primarily a diagnostic aid, but it may have therapeutic value. We have had in our experience two cases of pregnancy following shortly after insufflation of the tubes. We feel that it is a valuable diagnostic method and that we are not justified in operating on a woman for sterility with-

out first subjecting her to this test, just as we consider it necessary to examine the husband for active spermatozoa.

DR. ROLAND S. CRON, Ann Arbor, Mich.: I was greatly interested in what Dr. Ward had to say about the case in which he made a diagnosis of obstruction. I happened to be in New York at the time he operated on that patient. I have been very much interested to know whether she had patent tubes, and whether the gas passed through or not.

DR. WARD: We tested that case out, very soon after the operation, and the gas would not go through.

DR. CRON: We have had a case or two in the hospital in which a salpingotomy was done. The mucosa of the tube was brought in contact with the peritoneum, and in one of those cases at present the tubes, which were previously closed, were opened by the injection of gas under high pressure.

POSTOPERATIVE MASSIVE COLLAPSE OF THE LUNG

REPORT OF CASE *

HERMAN ELWYN, M.D.
AND
JOSEPH GIRSDANSKY, M.D.
Assistant Visiting Physician and Assistant Adjunct Visiting Surgeon, Respectively, Gouverneur Hospital
NEW YORK

The term massive collapse of the lung was first used by Pasteur [1] in 1890. He had been studying cases of postdiphtheritic paralysis of the diaphragm, and in five such cases that came to necropsy he found the lower lobes of the lungs atelectatic and airless, and that when thrown into water they sank to the bottom. He called this condition massive collapse of the lung. In

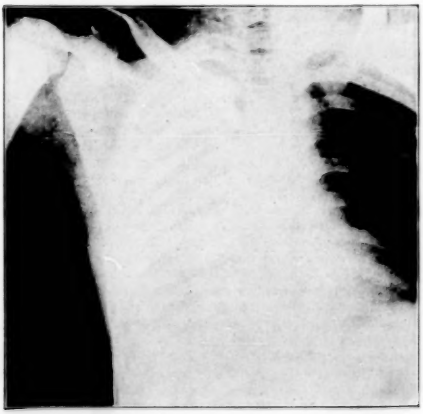


Fig. 1.—Appearance of chest, April 11.

1908 he [2] reported cases of collapse of the lung following operations, and again in 1914 he [3] reported sixteen cases of collapse of the lung among the postoperative pulmonary complications following 2,000 operations. The sixteen cases were divided among the following operations: ninety-seven operations on the stomach, one case; fifty-six operations on the liver and gallbladder, one case; 692 operations on the appendix, seven cases; 373 operations on the pelvic organs, seven cases.

About the same time, Elliott and Dingley [4] reported eleven cases. Crymble [5] reported cases of massive collapse of the lung following gunshot wounds.

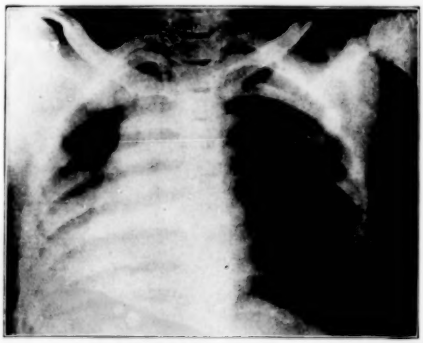


Fig. 2.—Condition, April 19.

During the war, the subject was especially studied by Sir John Rose Bradford [6] in the British military hospitals, and his two publications cover the subject completely. Further studies on the subject are by Scholtz,[7] Scrimger [8] and Briscoe.[9] In this country, mention of massive collapse of the lung is made by Pepper,[10] and recently Dr. St. John has reported to the New York Surgical Society two cases of massive collapse of the lung following abdominal operations.

Bradford defines massive collapse of the lung as "an unusual condition in which the lung, without the presence of any gross lesion such as bronchial obstruction, pleural effusion, etc., interfering with the free entry of air, becomes airless to a greater or less degree and therefore useless for respiratory purposes." It occurs after abdominal operations as well as after injuries to the chest and trunk, after fracture of the pelvis and after gunshot wounds of the chest. In cases following operations there are many factors which must be taken into consideration, such as anesthesia, posture, secretion in the bronchi, and injury to the diaphragm and its nerves. The ideal cases for the study of this condition are those following nonpenetrating gunshot wounds of the chest, and collapse of the contralateral lung occurring when no anesthetic has been administered, and when there has been no operative interference. Bradford mentions such cases. The wound, however, seems to be one of the essential conditions.

The collapse may involve a whole lung, one lobe or a portion of a lobe, or both lungs. It occurs from one to four days after the operation or injury, but

* From the surgical service of the Gouverneur Hospital.

1. Pasteur: Am. J. M. Sc., 1890, p. 242.
2. Pasteur: Lancet **2**: 1351, 1908.
3. Pasteur: Brit. J. Surg. **1**: 1305, 1914.
4. Elliott and Dingley: Lancet **1**: 1305, 1914.
5. Crymble, P. T.: Brit. J. Surg. **1**: 363 (Jan.) 1918.
6. Bradford, J. R.: Oxford Loose-Leaf Medicine **1**: 127; Quart. J. Med. **12**: 127 (Oct.) 1919.
7. Scholtz, C. J.: M. J. S. Africa **16**: 202 (June) 1921.
8. Scrimger, F. A. C.: Surg., Gynec. & Obst. **32**: 486 (June) 1921.
9. Briscoe, J. C.: Quart. J. Med. **13**: 293 (April) 1920.
10. Pepper, O. H. P.: M. Clin. N. America **5**: 737 (Nov.) 1921.

usually within the first twenty-four hours. It may last from a few days to several weeks. It may be complicated by areas of pneumonia in the collapsed lung, and any considerable increase in temperature is usually due to the presence of some inflammation, either in the collapsed lung or in the bronchial tree.

The onset is sudden, with marked dyspnea, but this varies greatly in its severity. Cough and expectoration depend on the presence of bronchitis or pneumonia.

The physical signs are as follows: There is considerable cyanosis of the skin and of the mucous membranes. The affected side is immobile or moves very little with respiration. The heart and mediastinum are drawn over to the affected side. This is the most characteristic sign. The apex beat may be found in the axilla when the collapse is on the left side, or behind the sternum when the collapse is on the right side. Over the collapsed lung the percussion note is dull to flat. The breath sounds are diminished or absent, or there may be bronchial breathing, depending on the patency of the bronchi. Vocal fremitus may be diminished, absent or increased. The presence and number of râles are variable and depend on the amount of secretion in the bronchi. They become very numerous when the lung begins to expand again.

Roentgen-ray examination is of diagnostic importance. A diffuse, dense shadow is seen over the side of the collapsed lung. The heart and mediastinum are seen to be displaced toward the collapsed side, and with the fluoroscope the diaphragm on the affected side is seen to be high and immobile. By following the case from day to day with roentgen-ray examinations the heart may finally be seen to have returned over night to its normal position.

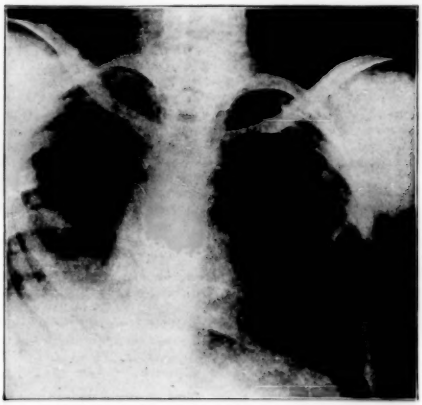


Fig. 3.—Appearance, April 26.

As the condition is as yet not generally known, or often goes unrecognized, we report a case which occurred in the service of Dr. Sellenings.

REPORT OF CASE

H. W., a schoolboy, aged 14 years, was admitted, April 9, 22, suffering from a stab wound in the abdomen. He had been stabbed with a pen-knife by another schoolboy.

On admission, the patient presented a picture of intra-abdominal injury. There were marked rigidity, pain and tenderness in the upper epigastrium, anxious expression, and a rapid pulse. In the epigastrium, just to the left of the median line, was a stab wound about half an inch long. The heart was negative. The lungs showed no impairment of breathing or of resonance. No râles were heard.

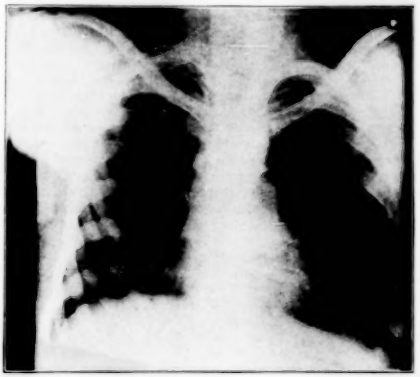


Fig. 4.—Normal appearance, May 10.

An exploratory laparotomy was performed; the stab wound penetrated the peritoneal cavity. The presence of free blood in the abdomen necessitated a thorough examination. All the abdominal organs were found intact, the bleeding being the result of a lacerated omental artery. This was tied, the tract of the stab wound excised, and the wound closed without drainage. The next day the patient's temperature rose to 101 F., and later to 103. A diagnosis of pneumonia was made, and consultation with the medical service requested.

Examination revealed the patient dyspneic, with a flush on his cheeks and cyanosis of the mucous membranes. The right side of the chest was flattened, and did not move with respiration. Percussion gave dulness over the upper part of the right side anteriorly, and flatness below. Posteriorly on the same side there was also dulness above and flatness below. Over the areas of dulness there was bronchial breathing, with a few râles. Over the flat areas, breath sounds and vocal fremitus were absent. The left side of the chest was hyperresonant, and the area of hyperresonance extended to the left border of the sternum. The apex beat could not be felt. We noted on the chart that the interpretation of these signs was difficult; that there was a possibility of consolidation with effusion at the right base; that there was also a possibility of massive collapse of the right lung, and that roentgen-ray examination would be necessary.

The roentgen-ray examination made, April 11, disclosed a dense shadow occupying the whole right side of the chest, and the heart and mediastinum drawn over to the right side (Fig. 1). On physical examination there was complete absence of breath sounds anteriorly and posteriorly on the right side, with the exception of the upper part of the right interscapular space, where bronchial breathing was heard. The apex beat could not be felt, and on the left side lung resonance extended to the left sternal border. Roentgen-ray examinations were repeated, April 15 and 17, with the same result as shown in Figure 1. The patient's temperature continued to be irregular. Only once did it rise to 103; usually it was below 102. He had a slight cough with, at times, a small amount of mucopurulent sputum.

April 19, his temperature was normal. The roentgenogram taken on this date showed that the upper part of the right

lung had become aerated. The lower part still showed a dense shadow, and the heart and mediastinum were still over on the right side. The right border of the heart could be made out more distinctly, and the trachea could be seen to be over on the right side (Fig. 2). Physical examination revealed tympany on percussion over the upper two right interspaces, with mixed bronchial and vesicular breathing, and many râles. For the next two days the physical signs remained the same. The dyspnea was much less, and there was no abnormal temperature. April 22, the picture had changed entirely. The apex beat was felt distinctly in the fifth interspace just inside the nipple line, and the right border of the heart could be made out on percussion, just outside the right border of the sternum. The breath sounds were heard distinctly over the whole right lung anteriorly, and posteriorly with numerous râles. The collapsed lung had again become inflated, and the heart and mediastinum were back in their normal position. The roentgenogram taken on the 24th showed the heart and mediastinum in their normal position. The lower part of the right lung was still not quite aerated. The roentgenogram taken on the 26th showed the same picture (Fig. 3). There were still some râles heard at the right base. A roentgenogram taken, May 10, revealed the heart and mediastinum in normal position and both lungs entirely clear (Fig. 4). Physical examination on the same date was negative.

COMMENT

This case undoubtedly represents one of massive collapse of the right lung following a stab wound in the abdomen. What part the wound itself and what part the anesthesia played in the production of the collapse cannot be determined. As we become more familiar with this syndrome, we shall probably find that many cases of postoperative pneumonia will prove to be massive collapse of the lung.

How the collapse is produced, we do not know. Pasteur assumes that the collapse of the lung following operation is due to a reflex inhibition of the movements of the diaphragm. He showed that paralysis of the diaphragm and chest wall, if persistent for two days, results in collapse of the lung. Elliott and Dingley have assumed the condition to be due to obstruction of the bronchial tubes by secretion. At necropsy no such obstruction is found. Briscoe assumes that, as a result of inflammation of the diaphragm and of the pleural membrane covering it, the diaphragm and its synergic and antagonistic muscles are out of action, and that this results in massive collapse of the lung—an opinion not much different from that of Pasteur. Perhaps experimental studies will eventually solve this problem.

141 West One Hundred and Tenth Street—204 West One Hundred and Tenth Street.

Cancer a Local Disease.—As cancer is a local disease, there is always a stage when complete removal and cure is possible. Successful surgical treatment then is a matter of early removal.—Wolbach, *New Growths and Cancer*, Harvard University Press, 1922.

FIBROSIS OF THE LUNG FOLLOWING ROENTGEN-RAY TREATMENTS FOR TUMOR

LAURENCE E. HINES, M.D.
CHICAGO

There is little known about the effect of the roentgen ray on lung tissue as applied in the treatment of pulmonary neoplasms. Holmes,[1] in summarizing the present status of roentgen-ray therapy, emphasizes that investigation is necessary to determine the amount and quality of irradiation that should be used in different diseases, the effect of irradiation on both normal and pathologic tissues, and the effect of treatment on the patient as a whole. The present report of the lesions in two cases of secondary lung tumors which were treated with roentgen rays may throw some light on the effect of irradiation on the normal lung and on tumors of the lungs.

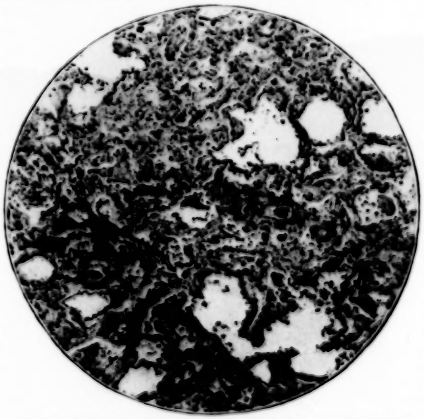


Fig. 1.—Low power of section of lung from Case 1, showing extent of fibrosis.

REPORT OF CASES

Case 1.—*History.*—In 1919, a painful swelling of the left arm developed in a man, aged 46. In February, 1920, because of the great swelling, he consulted a surgeon, who removed a tumor of the left arm. The growth recurred, the pain persisted, and about eight months after the operation a cough developed. In July, 1921, he was seen in the dispensary of St. Joseph's Hospital complaining of cough, expectoration of a gray, tenacious sputum, and pain in the left arm. He was then fairly well nourished, with a fever of 100, a pulse of 96, and respiration of 22. A tender swelling of the left humerus adherent to an old scar was present. There was limited excursion of the right side of the chest, and dulness over the right lower lobe. The roentgenologist reported that the right costophrenic angle was obliterated; the right diaphragm could not be outlined; in the left lung near the vertebra, at the level of the sixth rib posteriorly, there was a circumscribed nodule, and there were many large nodules in the right lower lobe.

Treatment and Course.—Three series of roentgen-ray treatments were given under the direction of Dr. Jenkinson: Oct. 5, 1921, Series 1, 140,000 Peak volts at 20 inches target distance from the skin, with a filter of 1 mm. of copper and 1 mm. of aluminum; 2,610 milliampere minutes were given over all parts of the chest; November 17, Series 2, 125,000 Peak volts at 12 inches target distance from the skin, with a filter of 10 mm. of aluminum; 2,400 milliampere minutes over the entire chest; Feb. 2, 1922, Series 3, 140,000 Peak volts at 20 inches target distance from the skin with a filter of 1 mm. of aluminum and 1 mm. of copper; 1,500 milliampere minutes over the front of the chest and 900 over the back of the chest were given. No further treatments were given because the patient's condition became worse.

After the first series, improvement was almost immediate, the cough improved, and he gained in weight and strength. The third series was interrupted because the cough became worse and dyspnea developed. March 3, the respiratory dis-

1. Holmes, G. W.: Am. J. Roentgenol. 8:522 (Sept.) 1921.

tress was so pronounced that he was admitted to Dr. Frederickson's service in St. Joseph's Hospital. He was mildly cyanotic, and complained of air hunger. Chest expansion was equal on the two sides and not limited. A general decrease in lung resonance and moderate dulness over the right lower lobe was present. There was no enlargement of the heart, nor were any heart murmurs audible. The systolic blood pressure was 120, and the diastolic 70. Repeated bacteriologic examinations of the sputum revealed pneumococci and streptococci, but no tubercle bacilli. Sometimes the sputum was mucopurulent, at other times of tenacious, mucoid consistency. The hemoglobin estimation was 74 per cent. by the Sahli scale; there were 4,000,000 erythrocytes and 5,600 leukocytes per cubic millimeter. The urine and feces showed nothing abnormal. The patient had a fairly constant fever varying from 100 to 101. The breathing was shallow and at a rate of from 30 to 50 a minute. The pulse was of good quality, not more than 100 a minute. He frequently complained of an inability to get sufficient air. The breathing became more and more difficult, the cyanosis deepened, and on March 13 he died.

Necropsy.—At the postmortem examination, about six hours after death, the body was that of a well developed man, 170 cm. long, weighing about 170 pounds (77 kg.). The nourishment was good. The skin and the mucous membranes were moderately cyanotic. The left elbow joint was ankylosed by a bony union. Two old scars extended vertically along the lateral surface of the left arm. There was a palpable thickening of the middle third of the left humerus, adherent to the scars. The humerus was removed and a fusiform enlargement of the middle, 4 cm. in diameter at the thickest portion, was composed of a soft, gray, friable growth that originated from the periosteum.

The anterior and superior mediastinal areolar tissue was thick and tough.

In each pleural cavity there was not more than 50 c.c. of clear, straw-colored fluid. Dense fibrous adhesions extended between the lower lobe of the right lung and the posterior wall and diaphragm. There were no adhesions in the left pleural cavity. The left lung weighed about 1,000 gm.; the surface was smooth; crepitation was absent in all portions; the substance was tough on section, and the cut surface had a dry, liver-like appearance. Multiple sections through all parts of both lobes revealed a lung substance of uniform dark brown appearance with but little air-containing tissue. No pus could be expressed from the bronchi, and no fibrin plugs were visible in the small amount of blood-stained fluid that was scraped from the cut surface. The right lung weighed about 1,100 gm. Except for a single nodule, 5 cm. in diameter, the upper lobe of the right lung was similar in all respects to the left lung. The lower and middle lobes of the right lung were densely adherent to each other by fibrous adhesions. Tumor tissue had replaced more than half of these lobes. There were several round gray-white, shining, circumscribed nodules averaging 2 cm. in diameter, closely set together and separated by a small amount of lung tissue similar in appearance to the parenchyma of the left lung. There was slight edema of the peritracheal and peribronchial lymph nodes. The lymph nodes in the superior mediastinum were enlarged, tough and surrounded by a thick fibrous capsule.

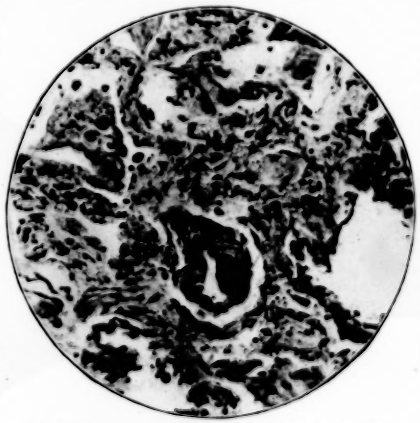


Fig. 2.—High power of section of lung from Case 1, showing proliferation of fibroblasts in the alveolar walls.

Except for slight fibrous thickening of the leaflets of the mitral valve, there was no change in the heart. The spleen was about twice its normal size, the capsule thickened and fibrous markings prominent.

Microscopic examination of sections from different parts of the tumor about the left humerus and from the nodules in the lung revealed a sarcoma with a predominance of large spindle cells of uniform size and appearance, arranged in twisted bundles. At the site of the tumor in the arm, the tissue was more cellular, with only a small amount of fibrillar intercellular substance, while in the lung tumor the intercellular substance was more prominent and contained abundant young and old connective tissue cells. The large spindle cells predominating in the sarcoma had a narrow rim of homogeneous protoplasm with large nuclei. Mitotic figures were infrequent.

Sections made from various parts of both lungs showed a decrease in the size of the alveoli and total obliteration of many of them, a striking feature, due to an increase in the alveolar walls by proliferation of fibroblasts, some of which extended into the lumen. There was a small amount of round-cell infiltration. In some of the alveoli, coagulum (edema) was present; in others, desquamatetd alveolar epithelium. The obliterated alveoli were filled with almost solid connective tissue. There was also some hyperplasia of the perivascular and peribronchial connective tissue, and a proliferation of connective tissue in the mediastinal lymph glands. The fibrous tissue in the spleen was increased.

CASE 2.—*History.*—A white woman, aged 53, was admitted to St. Joseph's Hospital, April 20, 1922, complaining of severe dyspnea, orthopnea and cyanosis. She lived only eight hours. In 1913, the right breast had been amputated because of a tumor. In July, 1921, enlarged right axillary glands were removed, and microscopic examination revealed the presence of closely packed columns and strands of carcinoma.

Following the operation, under the direction of Dr. H. E. Potter, she was given four series of roentgen-ray treatments, in which three areas were exposed each time. A voltage of 85,000 was used, and not more than 200 milliampere minutes were given over each area. In December, 1921, she was also exposed to 500 mg. hours of radium over the right supraclavicular region, 600 mg. hours in the right axilla and two needles of radium in the right axilla for three hours. In the first part of February, 1922, dyspnea developed and gradually increased in severity. The attending physician diagnosed left pleural effusion, and aspirated 1,000 c.c. of serosanguineous fluid, cultures of which were sterile. The dyspnea, which was only partially relieved by the aspiration, became more severe until her admission to St. Joseph's Hospital. The report of the roentgenogram taken a few hours before her death was: "The left lung is collapsed and fluid is present in the left base. There are circumscribed nodules in the left lung which might be interpreted as being carcinomatous nodules. The right lung is practically solid."

Necropsy.—At the postmortem, twelve hours after death, the body was 167 cm. long, weighing about 130 pounds (59 kg.). Nourishment was good, and there was an abundance of subcutaneous fat. The right breast was absent, and an old scar extended from the right anterior chest wall to and around the axillary fold. There were no nodules in the scar

or adjacent tissue. The subcutaneous tissue in the region of the scar was tightly bound to the chest wall by fibrous adhesions. No tumor tissue was found in the axilla or regional lymph nodes. There was about 1 liter of blood-stained fluid in the left pleural cavity. Many strands of easily torn vascular adhesions extended from the left lung to the posterior parietal pleura. There was about 1 liter of clear straw-colored fluid in the right pleural cavity, but no adhesions. Both right and left parietal pleurae were increased in thickness to 5 mm., owing to fibrous and hyaline changes. On the pleural surface of both lungs were irregularly shaped gray nodules averaging 10 mm. in diameter. Dense fibrous adhesions bound the left lung to the diaphragm, and obliterated the left interlobar fissure. The pleura over the posterior and diaphragmatic surfaces of the left lung was thick, grayish white, and of a tough consistency. Both lungs were decreased in size, the right one weighing 650 gm., and the left one, 725 gm. Three gray nodules averaging 15 mm. in diameter were found in the right lung. No nodules were found in the left lung. Both lungs were of a leathery consistency and noncrepitant. The lung substance had a uniform fleshy appearance, and dark, bloody fluid exuded from the cut surface. There was no pus in the bronchi or bronchioles, nor were any fibrin plugs found after squeezing the lung.

In the liver there was one nodule of tumor tissue 2 cm. in diameter. The myocardium was pale, and a few yellow plaques were seen about the mouths of the coronary arteries and in the ascending aorta. No notable changes were observed in the other viscera.

Microscopic examination of the tumor nodules in the lung revealed closely packed columns and strands of carcinoma cells with a fine stroma. The cells were of varying ovoid shapes, the nuclei large and granular, and with frequent mitotic figures. Degenerated areas were frequent. In the liver was an area in which the liver cells were almost completely replaced by carcinoma. The parietal pleura was a dense, fibrous tissue with hyaline deposits. The friable adhesions in the left pleural cavity were composed of hemorrhagic fibrinous material.

Islands of carcinoma had invaded all parts of both lungs, the islands being sharply demarcated from the surrounding tissue by a dense fibrous capsule. The alveolar walls were slightly thickened and compressed with resultant diminution of air space, the thickening due chiefly to edema, hyperemia, and small round-cell infiltrations, but there were some connective tissue cells present.

COMMENT

In Case 1, a spindle-cell sarcoma with lung metastasis, roentgen-ray treatment was given according to the newer method of higher voltage, greater filtration and longer target distance. At first there was improvement in the patient's condition; but, during the last series of treatments, symptoms of respiratory distress developed, and several days later death occurred. All parts of both lungs, postmortem, were consolidated from proliferation of connective tissue in the alveolar wall, with resultant great decrease in air space, which accounts for the dyspnea and cyanosis, and might be considered as the immediate cause of death. In Case 2, carcinoma of the breast with pleural and lung metastasis, only a limited amount of roentgen-ray treatment was given, and no large amount at any one time. As in Case 1, cyanosis and dyspnea were prominent symptoms, and the gross appearance of the lungs was similar in the two cases; but microscopic examination disclosed that the consolidation was due to a diffuse infiltration of the lung tissue with islands of carcinoma. Therefore, the dyspnea and cyanosis and the cause of death may be attributed to the extensive growth of tumor in the lungs. However, the hyperplasia of connective tissue about the islands of carcinoma in the lung may have been the result, at least in part, of irradiation.

Numerous reports of the beneficial effects on deep seated tumors from roentgen-ray treatment give the impression that irradiation may inhibit the growth or destroy it without harmful effect on neighboring normal tissue. Thus, Soiland,[2] though he admits that it is logical to assume that rays passing through normal and pathologic cells should exert a like effect on each, states that there is little clinical evidence that normal tissues are injured by deep roentgen-ray therapy. In Case 1, in which heavy doses were used, it is difficult to explain the condition found except as the result of the irradiation.

SUMMARY

The condition of the lungs in a case of secondary sarcoma indicates that normal lung tissue may become the seat of a pathologic fibrosis as the result of intensive roentgenization.

In a case of secondary carcinoma of the lungs, treated less intensively, extensive infiltrations were encapsulated by fibrous tissue.

St. Joseph's Hospital.

CONDENSED AND ACCURATE CHARTING OF THE DIAGNOSIS OF THE EAR, NOSE, THROAT AND TEETH *

W. PERRY REAVES, M.D.

GREENSBORO, N. C.

Records are of value in proportion to their etiologic accuracy, their accessibility and their legibility. The lower half of the head contains, in a comparatively small area, the upper respiratory tract, the beginning of the digestive tract and four of the special senses. Anatomically and physiologically, each two seem to be codependent. The eye needs the lacrimal duct for drainage into the nose; the ear the eustachian tube for ventilation. The olfactory bulbs function best in a well-ventilated nose. The gustatory sense is aided by the olfactory sense. This territory has been divided into sections or states of ophthalmology, otology, rhinology, laryngology and dentistry. The fifth nerve and its ganglions seem to be in high command and often bind them together in pain. An outbreak of the pathologic conditions or focal infection in one section appears to have a selected affinity, by continuity or contiguity of tissue, for its sister state.

The oculist may find an abscessed tooth the cause of choroiditis or iritis, or a sinusitis the cause of an optic neuritis or a labyrinthitis the cause of a nystagmus. The otologist is kept on the defensive to prevent the invasion of the enemy through the eustachian tube. In dentistry, we have thirty-two teeth which may harbor infection at some time in life. In rhinology, we have a good example of reciprocity. The nose and its accessory sinuses may be involved by the continuity and contiguity of tissue of the eye, ear, throat or teeth, and they seem willing at any time to reciprocate its pathologic condition and infection with the eye, ear and throat. The laryngologist may find local trouble resulting primarily or secondarily from reflexes or irritation

2. Soiland, A.: Am. J. Roentgenol. 8:276 (May) 1921.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

from pathologic conditions of the upper respiratory tract. And this is not all: we have what might be termed referred pathologic conditions in other parts of the body, such as asthma, goiter, bronchitis, chorea, neuritis, nephritis, heart lesions, lumbago, rheumatism or cholecystitis which may come from these focal infections.

To chart the locations and area of the examination of the abnormal, anatomic and pathologic tissue and the focal infection of the head, it is essential to know the normal anatomy, the physiologic function of the upper respiratory tract and its accessory sinuses, and the special senses; and to interpret the signals of distress of the special senses and the fifth nerve and its ganglions, of pressure either plus or minus, injury or insanitary conditions. By inspection, the visible abnormal anatomic and pathologic conditions are charted. By transillumination, a relative value of the invisible anatomic and pathologic conditions of the sinuses is found and charted. By a stereoscopic study of the roentgenogram, the inspection and transillumination is verified and may reveal a dark sinus to be a small one or absent.

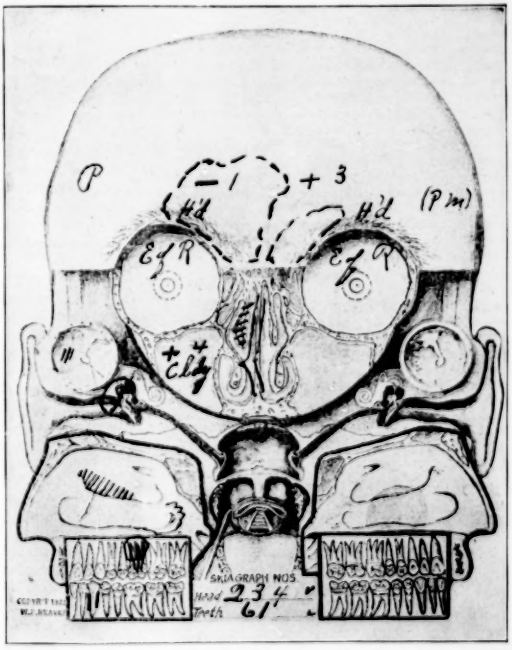
I believe all will agree that one can become more efficient in operative technic and treatment by confining himself to ophthalmology, otology and rhinolaryngology. On the other hand, one who groups his examination may simplify the operative procedure and treatment so that the apparently less efficient may become the more efficient in the final analysis. Delicate opinions are not so essential as concrete facts.

A well-balanced group would be ophthalmology, otology, rhinolaryngology and dentistry, the rhinologist and the dentist doing the roentgen-ray work.

It is not a hardship for the rhinologist to read the roentgen-ray plate; but it is an aid in making the diagnosis, and the easiest way to review the anatomy and pathology before operation. The subjective, functional and laboratory examinations have been purposely omitted.

Accessibility of records depends on their compactness, so that they can be filed in the minimum space and kept in easy reach.

Legibility of records depends on the accuracy of history and examination, and the charting of the inspection, transillumination, roentgenogram, operation, after-treatment and results, which enable one to interpret and visualize the patients' former conditions.



Card employed. Suggestions: *H'd.* headache; *P.* pain, shading, absent—previous operation; outlined area, area involved; outlined shaded area, area involved and subsequent operation; area with broken outline, outline of area; *−1* or *−2* and *+1, 2, 3, 4,* degree of transillumination; roentgenogram reading—clear, hazy, cloudy and size; *E. of R.,* error of refraction; abbreviations can be used to show diagnosis and area (O. M. C. C.); condition of teeth; line through root, pulpless, circle at apex, abscessed, lines at gum, pyorrhea. Part of history can be charted: a. m. or p. m., time of occurrence; arrow, direction in which pain radiates. Inspection: (1) E. of R. should be refracted for glasses; (2) middle turbinate has been removed; (3) septum to right with ridge; (4) hypertrophy of right posterior tip of inferior turbinate; (5) hypertrophied tonsils; (6) right tympanic membrane perforation; (7) pyorrhea of lower right cuspid. Transillumination: right frontal *−1:* very clear, suggests large frontal; left frontal *+3:* suggests sinusitis or small frontal; right maxillary *+4:* suggests sinusitis or old sinusitis with hypertrophy of tissue (referred to the roentgenologist). Roentgenogram: right frontal—clear and large; left frontal—clear and small; right maxillary, cloudy; right upper molar abscessed (history, inspection, transillumination and roentgenogram are grouped and referred to the surgeon's clinical experience for diagnosis). Group examination: (1) error of refraction; (2) deviated septum to right with ridge; (3) right maxillary sinusitis; (4) hypertrophy of right post tip of inferior turbinate; (5) hypertrophied tonsils; (6) teeth—referred to dentist; (7) referred to the surgeon's clinical experience for the diagnosis, overlapping pathologic conditions, obstruction, pain and reflexes. Halftones can be made in any size to fit any individual record card. Halftone in red gives good contrast in charting.

ABSTRACT OF DISCUSSION

DR. GEORGE F. KEIPER, Lafayette, Ind.: I am much interested in this chart, because I keep charts and records myself. When I first began this line of practice I followed the usual method then in vogue of writing information obtained in a book. But the first thing I knew I was forgetting to write down a lot of things I should have observed and failed to observe. In order that I might not miss anything, I began to search for means whereby I would have this information on a printed chart. Politzer gave me an idea which I amplified by printing on the back of his original record a number of diagrams so I could fill in what I wished. I have everything printed with record sheet that I ought to observe, and a space for making observations as to what the condition is. The advantage of having everything printed so that one can fill in is that it eliminates a great deal of mental effort. I see some possibilities in this diagram. Of course, we must amplify our charts to keep up with the progress that has been made in the different lines of work, and I believe that the best records will be made by having a printed form to go by in order that we may not forget anything. Of course, with any printed form it will be impossible at times to record everything that ought to be recorded on the form; but it is easy to attach a piece of paper on which one supplements what one has already recorded on the printed form. I like the idea of large filing cases in which to put the printed forms, adding to them from time to time as is necessary, keeping them in a large envelop or folder, and pasting on

subsequent records, that we may have an accurate record of the patient. We cannot trust our memory for everything.

DR. JOSEPH D. HEITGER, Louisville, Ky.: Dr. Reaves has given us a unique chart, and its application, of course, depends largely on the individual. I doubt very much whether any of us are satisfied with our case records. As evidence of that we have only to go back through our case records of several years past and compare them with those of the present and note the variation. Whether the variation is constant depends on the progress of our work. The average case record should contain a number of very fundamental things. The way in which this information is placed would again depend on the individual. But in an accurate history the most important thing is to get the chief complaint of the patient. A great deal of time can be saved in that way, particularly with a talkative patient who wants to give his whole life history. Following that we should get a chronological history and pick out the major from the minor points. Next in line would probably be the family history and then the personal history that is relevant to the case in hand. Following that would be physical examination and findings, and subsequent to that would come the summary. Then from this we could arrive at a tentative diagnosis. With the interpretation of the findings so far produced in terms of anatomy, physiology, pathology and biochemistry, and the case approached from this standpoint, there might be a change in the tentative diagnosis, which would lead to a final diagnosis. Then the definite, final diagnosis is usually put off until the completion of the case. This will necessitate study and repeated examination of certain phases of the findings. Then can be noted what was done, and last of all, the follow-up.

DR. W. PERRY REAVES, Greensboro, N. C.: As to printed suggestions, it has been my observation that they lead one into inaccuracies—putting what they suggest rather than one's own observations. The object was to do away with everything and make the man writing the record put down a record of that particular patient and nothing superfluous. We find that the trouble with the intern has been that he can write a beautiful history; but let him put down concrete facts, and then later if his observations are different he has another chance at it. Let him get away from the symptoms and give the etiology. Of course, this works out gradually.

WASSERMANN VARIATIONS

A STUDY OF THE SERUMS OF SEVENTY-FIVE PATIENTS BY EIGHT LABORATORIES *

LESTER J. PALMER, M.D.
SEATTLE

Every clinician learns by experience that there is a certain very small percentage of unavoidable error in even the most expertly conducted complement fixation test for syphilis. The present percentage of error is greater than this unavoidable error, resulting in further false positive and false negative reactions. Therefore, we find variation in the reaction on the same specimen of serum in different laboratories, and even on the same specimen in the same laboratory. This condition is at once evident to any one who has been sufficiently interested to investigate it. Uhle and MacKinney,[1] Phelps [2] and Wolbarst [3] all report such variations.

Our experience was repeatedly such, and in 1921 seven Seattle laboratories agreed to cooperate in examining the serums of seventy-five patients. Each serum throughout this series was drawn at one sitting and divided equally among the laboratories. Each patient was studied carefully clinically and classified as to positive, questionable or negative reaction. All cases were selected, except for ten known negative cases, because of variation between laboratories in previous Wassermann tests, or because of Wassermann reactions being at variance with clinical evidence. No frank primary or secondary syphilids were included in the study. Most of the syphilitic cases were latent or parasyphilitic.

The first twenty-five serums were examined only by the usual routine employed in each laboratory. The results of this series are seen in the tabulation of Series 1. Series 2, consisting of fifty cases, was conducted on the following plan: Seven laboratories cooperated: three technics were employed, Technic A, the usual routine employed in each laboratory; Technic B, the same as Technic A, except that all serologists employed the same antigen, and Technic C, a common technic, employing the same reagents throughout in each laboratory. In addition to this, the Dermatological Research Institute of Philadelphia examined each serum, using its usual routine and the new quantitative technic of Dr. John A. Kolmer. Our laboratory tested each serum, using Dr. Kolmer's new technic. Although the chart shows only twenty-six reports on each case, some idea of the amount of work done by the laboratories is evident from the fact that fifty setups were made on each serum in the second series, or a total of over 2,500 Wassermann tests.

Analysis of the results reveals: The percentage of variation between laboratories is so nearly equal with the A and B technics that employing a common antigen has not seemed to result in any improvement. Even the common Technic C does not show much less variation than the other two. In the untreated positive cases, all four technics, averaging all laboratories, agreed with the clinical evidence in more than 90 per cent., the percentage of agreement for any given laboratory ranging from 78 to 100 per cent. In the cases classified as negative, averaging all laboratories, the percentage of agreement varied from 88 per cent. for the C technic to 97 per cent. for the Kolmer. The large number of false positive reactions with the C technic, reported from two laboratories, is probably due to the fact that this common technic differed more widely from their usual Wassermann test than it did from the usual technic in the other laboratories, thus emphasizing the importance of the serologist's familiarity with the technic he is using. Except for the C technic, the percentage of agreement for any given laboratory ranged from 75 to 100 per cent. The Kolmer technic run in two laboratories averaged 95 per cent. agreement in the untreated cases giving a positive reaction and 97 per cent. agreement in the negative cases.

The cases classified as questionable are remarkably interesting. It was impossible to classify these cases as positive or negative because of doubtful clinical evidence, because of variation in previous Wassermann reactions, or because of variation in the reports of the eight collaborating laboratories.

In the first series, both questionable cases are believed to be nonsyphilitic, and hence the strong

* From the Virginia Mason Hospital.
* Read before the Section on Practice of Medicine at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.
* Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of a table. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Uhle, A. A., and MacKinney, W. H.: Comparative Results of the Wassermann Reaction, J. A. M. A. **65**: 863-866 (Sept. 4) 1915.
2. Phelps, O. D.: A Preliminary Report of the Result of Wassermann Tests as Reported from Different Laboratories, Calling Attention to a Little Nob on the Frenum of the Upper Lip, Which May or May Not Be Characteristic of Syphilis, Boston M. & S. J. **173**: 391-392, 1915.
3. Wolbarst, A. L.: Contradictory Findings in Wassermann Test, New York M. J. **98**: 378, 1913.

positive reactions are considered by us to be false positives. In the second series, no strong positive was obtained under Technics A or B.

Granting that little is known of the chemistry of the complement fixation reaction for syphilis; that the chemistry of the reagents employed is poorly understood; that many internal conditions of the patient may cause variation in results, is it not surprising to note so great a disagreement between serologists employing serum drawn at the same time, using the same technic, and exactly the same reagents from the same sources and with the same degree of freshness? The only difference which should appear under these conditions is that arising from the interpretation of the degree of hemolysis. Also, probably greater technical care was exercised in running this series, because of the spirit of friendly competition, than would be employed in the average case.

The results with the new Kolmer technic [4] are to be discussed in a separate paper, but some conclusions to date may be mentioned here briefly. The advantages in our hands have been: greater sensitivity and greater specificity than with our own quantitative technic. To date, we have received no false positives and but one false negative result. The reactions are sharp, clear-cut and easy to read. Fewer serums are anticomplementary to this technic, and it is economical. It requires more time, but as Kolmer emphasizes, "accuracy should never be sacrificed for speed or labor saving." It requires a somewhat greater technical ability, although, again to quote the author of the new technic, "the simplest technic is a complicated problem for the unexperienced and insufficiently trained worker; whereas a more complicated technic is perfectly simple to the experienced serologist." The chance of technical error is less because of the smaller amounts of reagent employed in greater dilution.

It is firmly believed that the great variety of technics now employed throughout the country as complement fixation methods for syphilis undoubtedly accounts for much of the variation in reactions and consequent growing lack of confidence in a test of undoubted virtue. It is believed that a great deal of this variation would be corrected by a standardized technic. Any additional expense of time or money, if such be necessary, would be justified by some improvement in the present conditions in regard to a test dealing with so important a matter as syphilis. This standardized technic should be sufficiently sensitive to detect the latent cases, with small amounts of reagin in the blood, and yet not so sensitive as to interfere with specificity and permit of false positive reactions. The greatest sensitivity permissible with safety should be used. False positive reactions are almost unforgivable—but it is believed that false negatives are equally so. We should not so fear an occasional false positive reaction, and, therefore, employ so insensitive a technic that many false negatives are obtained. The ideal would be an elimination of both.

A second and possibly greater factor in the variation of results is the technician. Certainly no test should be made with a greater feeling of responsibility or with more implicit attention to exactitude for every detail than the complement fixation test for syphilis. And yet in some laboratories technicians are employed to conduct the test who have had little or no training along biochemical lines, feel little responsibility for their work and are purely mechanical in what they do; and they often have little supervision. Probably few of us realize that, since inactivated serums have come to be generally used, a slight technical error, such as omitting one reagent, always produces a strong positive or a negative Wassermann reaction in the tube, which is missed in adding the reagent. Such a condition of affairs is a serious reflection on a profession which is content with such work. The technician should report what the test tube shows, and the interpretation of the result rests entirely with the clinician. The requirements for technicians before they are permitted to perform complement fixation tests for syphilis should be very high, and the right to perform such tests should be regulated by proper authority.

A third and possibly the greatest factor in the difficulties attending Wassermann tests today is the lack of knowledge of the profession at large concerning the interpretation of the laboratory report. Many patients with no history or clinical evidence of syphilis are being given antisyphilitic treatment on the evidence of a single weak positive Wassermann reaction. The laboratory cannot diagnose syphilis except by demonstration of *Spirochaeta pallida*. A single positive Wassermann reaction, even though it is a strong positive, does not finally prove that a patient has syphilis, although it is unquestionably correct in the large percentage of such reports; nor does a single negative reaction decide that a patient is nonsyphilitic. At present, a positive or a negative Wassermann reaction should never be considered final when it conflicts with the clinical evidence, unless repeatedly checked through more than one laboratory. A weak positive reaction without clinical evidence should never be considered diagnostic of syphilis. However, it is not to be overlooked that a spinal puncture may supply conclusive support for a repeatedly weak blood Wassermann reaction.

Each member of the profession should have a full understanding of the principles and general technical requirements of the Wassermann test, its limitations and shortcomings, and its diagnostic value, both in the presence and in the absence of clinical evidence. The serologist should never be asked to give a Wassermann report in less than twenty-four hours, and should be given a longer time if he considers it necessary. He should be allowed a fee which will compensate him for the time, ability and care required for the highest quality of work. The clinician should not demand that the serologist make either a positive or a negative report on a given serum. He should know something of the type of test made by the serologist from whom he obtains his reports and of his point of view, as emphasized by Kaplan.[5] Attention to these matters by serologists and clinicians with certain standardized technical improvements should make the Wassermann the most valuable laboratory test for syphilis which we have today.

Even a rapid analysis of the table reveals at once a much greater agreement in results in the second series than is found in the first. Also, it should be noted that the agreement between laboratories and the agreement with clinical evidence is higher than in any previously reported comparative series. As low as 20

4. Kolmer, J. A.: Studies in the Standardization of the Wassermann Reaction, XXX. A New Complement Fixation Test for Syphilis, Based upon the Results of Studies in the Standardization of Technique, Am. J. Syph. **6**: 82 (Jan.) 1922.

5. Kaplan, D. M.: Serology of Nervous and Mental Diseases, Philadelphia, W. B. Saunders Company, 1914.

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per cent. and never more than 70 per cent. of agreement, when three or more laboratories have collaborated, has been reported. Those of us who in the past have insisted that the laboratory diagnose syphilis with the Wassermann test will do well to note that no laboratory in this study agreed with the clinical evidence in 100 per cent. of cases, in spite of the excellent showing made by all laboratories participating. As Solomon [6] has very pointedly stated, "No matter how small the percentage of error may be, if it affects any given individual, it is a 100 per cent. error for the individual, and therefore it is the duty of the clinician to protect him as far as possible."

CONCLUSIONS

1. A safe and efficient standardized technic should be adopted and required of all laboratories.
2. A higher degree of efficiency should be demanded of technicians.
3. Laboratories performing the Wassermann test should be authorized and supervised by medical state or federal authority.
4. The profession at large should have a better understanding of the technical difficulties of the Wassermann test and of its value as a diagnostic procedure.

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SUDDEN DEATH IN TWO PATIENTS FOLLOWING INTRAVENOUS INJECTIONS OF ACACIA *

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The intravenous administration of acacia in shock, hemorrhage and allied conditions came into vogue especially during the World War. The objective evidences which would justify its use in patients and indicate its limitations are rather limited. Opinions of surgeons who have used it vary greatly as to its beneficial value, and there are those who regard it as actually harmful.[1]

Investigators are by no means agreed as to the true physiologic basis for the use of acacia. Bayliss [2] asserts that it is chemically inert, and attributes the rise in blood pressure it produces in animals to its physical properties, i. e., to its behavior as a colloid. Erlanger [3] and his associates, and Hurwitz [4] also incline to this view. On the other hand, Zondek [5] and Erich Meyer [6] regard the calcium in the acacia responsible for any improvement in the circulation, and they report equally good results by the use of Ringer's solution containing an excess (0.8 gm. per liter of the dried salt) of calcium chlorid. Bernheim [7] found acacia solution to be no better than ordinary salt solution (0.9 per cent. sodium chlorid) for maintenance of the blood pressure in shock, and he preferred the transfusion of citrated blood. Stewart [8] regards acacia as distinctly unphysiologic. Foster and Whipple [9] have shown that acacia in dogs delays the restoration of fibrin to normal, and at times delays the coagulation time of blood for many hours. Richet, Brodin and Saint Girons [10] concluded that the use of acacia offers no advantages over salt, sugar and serum in dogs subjected to repeated hemorrhages, and in large doses exerts a toxic action. Recently, Haggard and Henderson [11] have shown that acacia is deleterious when injected intravenously into dogs suffering from severe hemorrhage. Henderson and Haggard believe that acacia cannot take the place of the essential element of the blood for supplying oxygen to the tissues, namely, the red blood corpuscles. The recovery of animals receiving other salt solutions was better than in those receiving acacia. Other evidences [12] in the literature indicate that the oxygen deficiency in the tissues may be a more useful criterion for judging the usefulness of therapeutic measures in shock than the blood pressure level. If this is true, transfusions of blood would be superior to intravenous injection of acacia as a therapeutic measure. However this may be, the physiologic aspects of the problem of shock are by no means settled and, therefore, it does not seem that the use of acacia and similar therapeutic measures is justified solely on the basis of certain physical properties which may or may not be of prime importance in the treatment of the condition.

As far as is known, acacia is nontoxic when administered by mouth or injected subcutaneously. When it is injected intravenously, however, the same dangers and the same limitations that apply to intravenous medication in general are involved. The intravenous injection of acacia into guinea-pigs has been shown by Hanzlik and Karsner [13] to be distinctly injurious, causing symptoms which resemble anaphylaxis, but differing from true anaphylaxis in several particulars, including the formation of emboli and thrombi, with the presence of pulmonary hemorrhages and conglutinated corpuscles in the pulmonary capillaries. Similar symptoms were reported by American surgeons during the World War [14] and by others. Bayliss showed that acacia agglutinated cat's corpuscles in vitro, and this was shown to be true for several other species, including the red blood corpuscles of man, by Kruse [15] and by Karsner and Hanzlik. In connection with their study of the movements of intestinal villi in dogs, King, Arnold and Church [16] report that intravenous injections of the acacia which they used were toxic, causing a rapid onset of shock, with diminution in activity of intestinal villi and lymph flow. Recently, Olivecrona [17] reported the death of a woman following the injection of a 6 per cent. solution of acacia, and he warns against its indiscriminate use.

The experience of Olivecrona prompts me to report two cases in which death occurred rather suddenly following the intravenous injection of acacia solution.

6. Solomon, H. C.: Agreement in Results of the Wassermann Reaction, J. A. M. A. **74**: 788 (March 20) 1920.

* From the Department of Pharmacology and Therapeutics, Stanford University Medical School, and San Francisco Hospital.

1. On the Intravenous Use of Acacia, editorial, J. A. M. A. **78**: 1897 (June 17) 1922.
2. Bayliss, W. M.: Intravenous Injection in Wound Shock, Brit. M. J. **2**: 553 (May 18) 1918.
3. Erlanger, J., and Others: Am. J. Physiol. **50**: 31, 104, 119, 149 (Oct.) 1919.
4. Hurwitz, S. H.: Intravenous Injections of Colloidal Solutions of Acacia in Hemorrhage, J. A. M. A. **68**: 699 (March 3) 1917.
5. Zondek: Biochem. Ztschr. **110**: 246, 1921.
6. Meyer, Erich: Klin. Wchnschr. **1**: 1 (Jan. 1) 1922.
7. Bernheim, B. M.: Hemorrhage and Blood Transfusion in War, J. A. M. A. **73**: 172 (July 19) 1919.
8. Stewart, G. N.: Am. J. Physiol. **49**: 233 (July) 1919.
9. Foster, D. P., and Whipple, G. H.: Am. J. Physiol. **58**: 393 (Jan.) 1922.
10. Richet, C.; Brodin, P., and Saint-Girons, F.: Presse méd. **26**: 581 (Nov. 14) 1918.
11. Henderson, Yandell, and Haggard, H. W.: Hemorrhage as a Form of Asphyxia, J. A. M. A. **78**: 697 (March 11) 1922.
12. Newer Conceptions Concerning Shock, editorial, J. Lab. & Clin. Med. **7**: 498 (May) 1922.
13. Hanzlik, P. J., and Karsner, H. T.: J. Pharmacol. & Exper. Therap. **14**: 379, 425 (Jan.), 449, 479 (Feb.) 1920.
14. Robertson, O. H.: Central Med. Dept. Lab., Div. Surg. Research, A. P. O., France, Oct. 27, 1918, p. 721.
15. Kruse: Am. J. Physiol. (Proc.) **49**: 137, 1919.
16. King, C. E.; Arnold, L., and Church, J. G.: Am. J. Physiol. **61**: 80 (June) 1922.
17. Olivecrona, H.: Acta chir. Scand. **54**: 1, 1921.

Both patients presented symptoms, which, according to the advocates of acacia, constitute indications for the use of the drug. No beneficial effects whatsoever were observed, and in both patients death occurred sooner than it was expected.

The acacia was used as a 6 per cent. solution of gum arabic No. 1 (best quality obtainable) in 0.9 per cent. sodium chlorid solution. The solution was filtered by suction; then the filtrate was neutralized with sodium hydroxid, and the second filtrate was filtered again, sterilized in an autoclave and then used for the injections.

The essential data pertaining to these patients are presented in the following brief protocols.

REPORT OF CASES

CASE 1.—R. N., a man, aged 78, entered Lane Hospital of Stanford University, Dec. 24, 1920. He was large and well built, but emaciated, and, on entry, in no discomfort. Physical examination revealed a large, hard, nodular mass in the right upper quadrant presumably attached to the liver, and a right inguinal hernia. Aside from these lesions there were no abnormalities. There was no history of circulatory disorders. Systolic blood pressure was 125 mm., diastolic 78 mm.; hemoglobin was 80 per cent. (Tallqvist scale); erythrocytes, 4,110,000 and leukocytes, 20,100 per cubic millimeter. Blood was absent in the gastric contents. A tentative diagnosis of carcinoma of the stomach was made.

On the morning following his admission to the hospital, the patient complained of some weakness, faintness and suffocation. These subjective symptoms increased in severity until about 10 a. m., when the patient appeared to be in a state of shock. Marked dyspnea and orthopnea were present; the skin was pale and cold; the pulse rate increased from 78 (the day before) to 140; the blood pressure was 120 mm., and respiration, 40 a minute. The nature of this collapse was not clear at the time, but in view of the suspected carcinoma it was thought likely that it was due to an internal hemorrhage. Tyramin, 0.06 gm., was injected subcutaneously, and in fifteen minutes the blood pressure had risen to 145 mm. The pulse and respiratory rates were unchanged, but the patient appeared to be improved. The tyramin was repeated one hour later. Following the second injection of tyramin, the patient was given 500 c.c. of the acacia solution intravenously. His condition was immediately worse. He became unconscious; the pulse was imperceptible at the wrist; marked cyanosis was present, and death occurred about five hours later. The following resuscitative measures were administered immediately after the injection of the acacia: 1 c.c. of camphorated oil intramuscularly; 0.7 c.c. of epinephrin (1:1,000), subcutaneously, and 8 c.c. of tincture of digitalis by mouth. When the heart sounds were no longer audible, 0.7 c.c. of epinephrin (1:1,000) was injected into the right ventricle. No beneficial effects were observed from any of these measures. Necropsy was not permitted.

Briefly summarized, this patient, who was originally in fairly good condition, suddenly developed symptoms of shock. The circulation was depressed, but responded in the usual way to tyramin. However, when acacia solution was administered intravenously, the patient's condition became worse immediately, and death occurred within a comparatively short time. No beneficial effects from the acacia could be recognized. The impression was gained that the patient's decline was accelerated by the acacia injection.

For the description of the next patient, I am indebted to Dr. D. F. Shepardson, house officer in the Department of Medicine, Lane Hospital of Stanford University, who administered the acacia and made the subsequent observations. The acacia solution used was the same as that administered to the first patient.

CASE 2.—W. S., a man, entered the hospital in May, 1919, with a diagnosis of pulmonary tuberculosis. Jan. 18, 1921, a pulmonary hemorrhage occurred, the patient losing about 500 c.c. of blood. Three days later a second hemorrhage took place, with a loss of about 750 c.c. of blood. After the second hemorrhage the patient was weak and anemic, but his general condition was fairly good. On the day following the second hemorrhage the patient was given 150 c.c. of 6 per cent. acacia solution intravenously. Just before the injection of the acacia, the systolic blood pressure was 85 mm. Immediately following the injection the patient's condition became worse, although the systolic blood pressure had risen to 145. He became dyspneic and complained of a feeling of oppression in the chest, and expressed great apprehension of approaching death. Fifteen minutes after the injection of the acacia, the blood pressure had fallen to 75 mm., and shortly after this to 60 mm. systolic. At this time 1 c.c. of 1:1,000 epinephrin was injected subcutaneously. The blood pressure rose to 80 mm., but without improvement in the general condition. Two and one-third hours after the injection of the acacia, the blood pressure was 50 mm. Soon after this there was another small hemorrhage (less than 100 c.c. of blood). Death occurred two hours and twenty-five minutes after the injection of the acacia. Necropsy was not obtained.

Briefly, therefore, the condition of this patient, which was fairly good despite several pulmonary hemorrhages, was immediately and permanently impaired by the intravenous injection of acacia, and death occurred rather promptly.

COMMENT

Taken as a whole, the results obtained following the injection of acacia in these two patients give the impression that this agent is not entirely harmless. Both of the patients presented symptoms which are claimed to be indications for its use. However, no beneficial results were obtained. In Case 1, the symptoms of collapse were not alleviated, but on the contrary, were aggravated after the injection. In Case 2, there was an abrupt change for the worse after the acacia was administered, and a rapid decline set in which resulted in death much sooner than it was expected. In this patient there was only a transitory rise in blood pressure following the acacia. The rise in blood pressure which occurred appeared to be out of proportion to the effects of the volume (150 c.c.) of solution that was injected. However, despite this rise in blood pressure the patient suffered an immediate, sudden and alarming change in his general condition which, prior to the injection, was judged to be fairly good. Neither patient was moribund, and there was no reason to believe that both patients could not have survived the time period during which death occurred had not acacia been injected.

As far as the method of preparation of the acacia solution and quality of the product and dosage are concerned, it is not believed that these in any way contributed to the cause of death in these patients. The acacia was of the usual variety; the solution was freshly prepared, neutralized and filtered according to the directions of Bayliss. This is the smallest disadvantage to the use of acacia. The main difficulties arise when the acacia is introduced into the blood stream. Whether emboli, or thrombi, and conglutinated corpuscles occurred in these patients is not known. It would be useless to speculate further, but the dangers of intravenous medication are emphasized again, and these are not confined to acacia, whose rôle as a beneficial therapeutic agent in shock, hemorrhage and allied conditions may, indeed, be questioned.

SUMMARY AND CONCLUSIONS

1. Two patients died rather suddenly after the intravenous injection of acacia solution.

2. No beneficial effects were observed from its use in these patients.

3. Definite and immediate deleterious effects were observed in at least one, and death was accelerated in both of the patients as a result of the injection of the acacia.

4. This is in accord with the deleterious effects of acacia in animals and man reported by others.

5. It is doubtful whether acacia is an absolutely harmless agent when used in shock, hemorrhage and allied conditions.

PRESENT STATUS OF THE TREATMENT OF TUBERCULOSIS*

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One of the most potent factors in retarding progress in the treatment of tuberculosis is the pessimistic psychology which has surrounded this disease from time immemorial, and which, in spite of the great progress recently made, still holds sway in the minds of both medical men and laymen. Regardless of our lack of a specific remedy for its treatment, if the measures which have been gradually evolved during the last half century are applied during the early clinical stage, and continued for a sufficiently long time, with the hearty cooperation of the patient, nearly all patients with tuberculosis can be restored to health.

This optimistic statement presumes that:

1. Present measures used in treatment are sufficient to cause tuberculosis to heal.

2. These measures must be applied early.

3. The treatment must be carried on for a sufficient time.

4. The patient must give a whole-hearted cooperation.

This paper will consist of a discussion and elaboration of these four points.

In this statement of the present status of therapy I believe that a discussion of fundamental factors is of more importance than a discussion of each particular remedy. Such a discussion should outline what we are attempting to do by therapy; and, when this is made plain, the measures will naturally fall into the classes to which they belong.

HOW TUBERCULOSIS HEALS

Nature heals tuberculosis by keeping the anatomic elements of the host, that is, the body cells, in a condition of high physiologic activity. An individual overcomes an infection when once established by destroying what bacilli he can by his own natural defensive elements supplemented by a specific reaction with which his body cells have been endowed as a result of the infection, and by sealing up and burying in a wall of fibrous tissue those bacilli which he is not able to destroy.

It is self-evident that the nearer the body can come to maintaining a physiologic equilibrium, the more able it will be to overcome an infection. It is also self-evident that the intensity of the process, or the amount of physiologic disturbance, is of greater weight in prognosis than the extent or the amount of anatomic disturbance, except in widespread fibrosis, when the amount of lung destroyed becomes the really serious factor. It is further self-evident that the less the anatomic and the physiologic disturbance, the better the chances of healing, because under these conditions fewer bacilli and toxic bodies are gaining access to the circulating fluids.

There are two methods of approach to the cure of an infectious disease; one by specific remedies which combat the organisms or their toxins directly, such as antitoxin in diphtheria and quinin in malaria, and the other by aiding the natural defensive forces of the patient so that he cures himself. So far, tuberculosis has baffled search for a truly specific remedy; and while the search for such a measure still goes on and the hope of some such boon to the race being discovered is deeply embedded in the minds of investigators, yet many of those who are most interested in the solution of the tuberculosis problem have greater hope that some method of vaccination may be discovered which will protect the individual against massive infection, during the early years of life.

AIM OF THERAPEUTIC MEASURES

The measures which have secured general recognition in the treatment of tuberculosis have one common aim, that of keeping the patient's physiologic equilibrium so balanced that his body cells function to the best advantage. These measures include open air; a sufficient supply of adequate food; sun, air and water baths; rest when the disease is active; exercise when the disease is quiescent, provided there are no other contraindications; medicinal tonics; measures which are directed against harmful symptoms and complications; psychotherapy, and artificial pneumothorax. One and all, these improve in one way or another, either in a large measure or in a small one, the physiologic working of the organism. The value of measures in treatment will differ according to how great a service each can render to the patient.

The physiologic action of the important viscera is not only influenced but also controlled by the vegetative nerves and chemical substances which are termed internal secretions. This nerve and chemical control of the body is influenced by physical and psychic stimuli. Stimuli of both varieties may be salutary or harmful. Symptoms of disease represent the effects of the latter. Is it not possible that there is a marked stimulation of normal physiologic activities caused by the disease? May we not judge this from the fact that the sympathetic system is stimulated by toxins, and that the suprarenals and thyroid also respond? While in fatal disease we see the breaking down of the entire physiologic response, yet in the great majority of infections it proves sufficient to withstand the attack and to bring the patient safely through.

There is a generally accepted treatment of tuberculosis today which consists of hygienic living in the open air with rest and a sufficient supply of adequate food. This is the nucleus around which all recognized regimens are established. To this, one man may add climate; another, water or sun baths, and still another, psychotherapy, tuberculin, pulmonary compression or some other favorite measure; but the basis is always the same.

This treatment is so generally accepted that it always comes to mind when the disease tuberculosis is mentioned. It is so well established that it is instituted as

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

a matter of routine; but, since things which are so instituted are not always employed with the greatest intelligence and discriminating judgment, it is well to pause and analyze the effects exerted by such measures on the disease.

The outstanding fact in such a therapy is that it is a natural one. It is a method of making the well, no less than the sick, stronger. In early clinical tuberculosis, before serious harm has been done to the organism, the main purpose of therapeutic effort is to keep the physiologic processes of the body running in the most natural manner possible until the disease can heal. This is relatively easy of accomplishment, because there are no great hindrances working in opposition beyond those peculiar to the individual in question. Later, the physiologic processes of the individual are disturbed not only by whatever peculiar deficiencies he may possess when in usual health, but also by harmful influences incident to the disease, such as toxins, reflex impulses, and anatomic and psychic changes.

That patients differ greatly in the manner in which they react toward disease is well known. That this may be due to differences in physiologic activity which are fundamental to the individual does not seem to be realized so fully; yet every one must recognize when the facts are presented that such fundamental factors as those which control growth, development and visceral activity exert a determining influence on the manner in which such a patient will react when affected by such a disease as tuberculosis. When patients with early clinical tuberculosis, either with or without fundamental physiologic handicaps, are put upon a hygienic dietetic regimen, the really outstanding measures for improving this physiologic activity have been instituted. They may be supplemented in one case by one measure, in another by others; but the purpose of all such measures is to fortify the patient and call out resistance to oppose the progress of the disease.

INDIVIDUAL THERAPEUTIC MEASURES

There are certain measures which are of value throughout the disease, from the time it is first recognized as a clinical entity until the process heals or destroys the patient. Then there are others which are particularly directed to certain conditions.

Rest is always advisable when the disease is active and when exertion produces any of those symptoms which we have learned to assign to the action of toxins. Exercise, while just as valuable in building up the patient's physical strength as rest is in favoring a quiescence of the disease, is applicable only when the clinical process is so quiescent that exertion fails to cause toxic symptoms, and when the patient is able to provide the extra energy required without interfering with his ability to supply the demands made by the normal physiologic processes.

There are hydrotherapeutic measures which may be added to the requirements of the patient in all stages and conditions met in the disease; but some of those which are applicable in early and quiescent conditions are not at all suitable in active toxic cases.

The value of light and air baths is not sufficiently understood. In all nontoxic conditions, exposure to the direct rays of the sun is of great value. This procedure may not have any specific effect, but it is probably one of the best measures that we have for improving the physiologic reactions of the patient. Through the action of air and light on the skin, the sensory nerve endings are stimulated and the entire physiologic mechanism of the body is favorably influenced. The value of open air is rendered many times greater by accustoming the patient to little clothing so that the air can circulate freely about the skin, and by exposing the naked skin to the air and light. Full sunlight for a portion of each day can be given with great benefit to all nonfebrile patients and even to some who have slight elevation of temperature, and air and light baths can be used very generally.

HOW TUBERCULOSIS DISTURBS THE PATIENT'S PHYSIOLOGIC BALANCE

Tuberculosis affects the patient's physiologic balance in two ways; through the toxins which produce a general disturbance, and reflexly, which is more specific in that the effect is directed more specifically to certain tissues and organs. It is toward the toxins, however, that we must direct much of our therapeutic effort. Patients do not die because of the extent of the pulmonary disease alone, or because of the reflex disturbances in other organs, although at times cough of reflex origin calls for a tremendous expenditure of energy and proves to be very harmful, and the reflex gastro-intestinal symptoms may become very troublesome; but the chief factor which exerts the harmful influences in tuberculosis is the toxemia. Toxins acting on the nervous and endocrine systems are responsible for disturbances in physiologic control of the body and ultimate injury to the body cells which may defy all efforts at repair and eventually lead to death. In this I am omitting from consideration all serious complications.

MEASURES WHICH COMBAT EFFECTS OF TOXINS

There are accepted measures for treating tuberculosis which aid the body in preventing the disease from becoming severely toxic, and further help it to combat the effects of the toxins when present. There are three outstanding measures in the treatment of tuberculosis when the toxic stage has been reached: rest, artificial pneumothorax, and alkalis with large quantities of water.

If only we knew how toxins acted, we might be able to defend the body against them. One of the most common misconceptions is that fever and toxemia are synonymous terms. The effects of toxemia are usually wrongly attributed to the fever. An elevation of temperature, however, is only one of many symptoms which result from the action of toxins. Malaise, lack of strength and endurance, nerve instability, loss of appetite, decrease in motility and secretory activity throughout the enteral system, and rapid heart action are just as much due to toxemia as elevation of temperature; so is necrosis favored by it.

Another effect of toxemia, and possibly its chief effect, is interference with oxidation and the causing of retention of acids in the tissues. This disturbs the acid-alkali balance of the body cells, and produces an increase in their water-binding power. Balcar, Sansum and Woodyatt [1] believe that temperature elevation is due to the lack of free water in the body caused by an increase in the water-binding power of the body colloids. It certainly seems as though all toxic symptoms were associated with a retention of acid in the body cells which necessarily results in an increase in the water-binding power and a diminution of the free

1. Balcar, J. O.; Sansum, W. D., and Woodyatt, R. T.: Fever and the Water Reserve of the Body, Arch. Int. Med. **24**: 116-128 (July) 1919.

water in the body. Whether it is the retention of acids or the lack of free water, or both, or neither, which causes the symptoms is not quite clear. Recent study of the normal activity of the intestine by Hammett [2] indicates that hydrogen-ion concentration stimulates the sympathetics predominantly. Toxemia is accompanied by hydrogen-ion concentration, and this observation might be used as a basis for surmising that hydrogen-ion concentration is an important factor in the predominant sympathetic activity observed during toxic states.

Rest.—One of the important functions of rest as a therapeutic agent in this disease is undoubtedly based on its influence on the acid-alkali balance of the tissues. Exercise calls for an amount of oxidation over and above that which is present during rest, and, even in health, results in a temporary storing of acids in the tissues. When the patient is suffering from toxins, this disturbance in the normal acid-alkali balance is still further disturbed both from the exercise itself and because of an increase in the amount of toxins thrown into the tissues. The fatigue which results from exercise in the normal is exaggerated and marked by those symptoms which are recognized as toxic in the tuberculous. Therefore, rest proves to be a potent measure for good during all stages of tuberculosis when the physiologic mechanism is being disturbed by toxins. When intelligently applied, it is unquestionably the most effectual remedy that we possess in the treatment of tuberculosis. Not only fever but all toxic symptoms as well as other conditions must be considered in determining when rest shall be instituted and how long it shall be continued.

Artificial Pneumothorax.—For the last decade, pulmonary compression has been gradually coming into use and has shown itself to be particularly beneficial in the treatment of cases of rapidly spreading caseation. At times this method is very effective and relieves the toxemia, and restores the physiologic balance. In other instances, however, when satisfactory compression cannot be had, or when other active foci in the other lung exist, the procedure, of necessity, fails. In some cases necrotic areas and cavities are compressed and eventually brought to a stage of quiescence. One serious objection to this procedure is that it is available in only a limited number of cases, those in which the activity is almost completely one-sided and the pleura is either free from adhesions or the adhesions, if present, will readily separate. The other lung must be fairly free from disease, and should preferably be entirely free from activity. The importance of the condition of the other lung is not sufficiently recognized. If collapsing a diseased area is to be successful, the probability is that the entire lung will be compressed for an indefinite number of months because the normal collapses along with the infiltrated tissue. In some instances it is permanently put out of use by fluid in the pleura followed by the laying down of dense scar. No lung should be compressed, then, unless the other will be fully competent to carry on the requirements of respiration.

Compression is not a cure for tuberculosis. Any patient is better off if he can secure a healing without rather than with it; but in a small number of cases a cavity, particularly a recent one, may be compressed which would otherwise continue to secrete; and in acute softening, toxemia which otherwise might prove fatal may be cut short. It requires considerable judgment to know when to compress and when not to do so. When once the technic is learned, one is often impelled to compress when a result more favorable to the patient could have been obtained without it.

Alkalis and Water.—Four or five years ago, a patient with advanced tuberculosis under my care in the sanatorium had a prolonged siege of toxemia accompanied by the usual symptoms, including rise of temperature. She became so ill that death seemed imminent. I assumed that there must be a relative increase in the acid balance of her tissues under the conditions which were present, and ordered a rectal drip, using 3 per cent. sodium bicarbonate instead of sodium chlorid. The patient was given the soda solution for about four hours a day. To our great gratification, after two or three days she showed signs of improvement, and made a gradual recovery from her serious condition. She later attained a better state of health than she had enjoyed for a long time.

The interesting thing was that all of those symptoms which we recognize as being of toxic origin improved. She became less nervous, lost her malaise and slept better. The appetite improved and was accompanied by better digestion. I attributed this to a restoring of the acid-alkali balance of the tissues. We then adopted the use of soda drips for other patients who were severely toxic, and later extended it even to those who were only mildly toxic. Coincident with the gradual extension of this line of therapy, we found that the digestive disturbances of many of our patients were improved by a mixture of sodium bicarbonate, magnesium oxid and bismuth subcarbonate. Finally, we were led to believe that the alkalization of the tissues was a factor in the improvement of these patients too.

Our observations were in this state of evolution when the experiments of Balcar, Sansum and Woodyatt,[1] and Schmidt and Sansum,[3] dealing with the importance of free water in the body, came to my notice. While these papers were dealing primarily with the relationship of fever to the free water in the body, they caused me nevertheless to take this water factor into consideration in accounting for the good results that we had obtained.

There does not seem to be any doubt about toxins decreasing the alkali balance in the tissues. There is also no doubt that this shifting of the acid-alkali balance causes the body colloids to bind more water.[4] Furthermore, there is no doubt that a reduction of the alkali balance of the body cells interferes with their normal action, and that the lack of free water, if sufficiently great, causes a rise of temperature.[5]

Alkalis, when administered, will combine with the acid radicals of the tissues and set water free, thus relieving the cells and increasing the free water reserve of the body. The administration of water alone will keep up the free water supply and thus provide conditions more favorable for the functioning of the cells. Sansum has been able to carry pneumonia patients through their illness with little rise of temperature by the administration of water.

2. Hammett, F. S.: The Rôle of the Change in Hydrogen-Ion Concentration in the Motor Activities of the Small Intestine, Am. J. Physiol. **60**: 52 (March) 1922.

3. Schmidt, E. C., and Sansum, W. D.: Further Studies in the Nature of Fever, California State J. Med. **19**: 371 (Sept.) 1921.

4. Fischer, M. H.: Oedema and Nephritis, Ed. 3, New York, John Wiley and Son, 1921, p. 238.

5. Balcar, Sansum and Woodyatt (Footnote 1). Schmidt and Sansum (Footnote 3).

We have tried some tuberculous patients with fever on large quantities of water (from 10 to 15 glasses a day) by the mouth, and have felt that it was of value; but it is our impression that from 4 to 6 gm. of sodium bicarbonate daily, taken with the free use of water, gives better results. We find it difficult for many patients to drink large quantities of water; particularly is this true in those advanced cases in which the patients suffer from an atonic condition of the gastrointestinal tract. It seems to me that alkalis plus water are better than either one alone in the clinical treatment of these conditions.

The effect in the more toxic cases has led us to employ this method in less toxic ones. I wish to insist again that rise of temperature and toxemia are not synonymous terms. We have been gradually coming to the conclusion that many patients suffer from a toxemia of sufficient gravity to undermine their ability to oppose the tuberculous infection with little or no elevation of temperature. With this conception, we have gradually extended our application of these measures to some patients who are practically fever free. The result has been gratifying.

It is difficult to judge of the value of remedial measures applied in a disease such as tuberculosis, because it has so many variations in its course, each of which is expressed in the patient's general feelings, that one's opinions can often be little more than impressions. We are decidedly of the impression, however, that the alkalization of toxic tuberculous patients, accompanied by the free use of water, preserves a better physiologic equilibrium and relieves them of many toxic symptoms, which if continued would ultimately break down the mechanism with which the patient resists the disease.

Since the disease is chronic and the toxic state often lasts for weeks or months, it is necessary that these measures be applied in ways that are acceptable to the patient. We have used the rectal bicarbonate drip for a period of four hours daily for a month or six weeks in some cases without interruption. As a rule, however, we use it for about two or three weeks, then interrupt for a few days, and resume again. We added glucose in some instances, but it proved too irritating for continuous employment. Needless to say, local disease of the rectum, such as hemorrhoids, may prove to be a contraindication to the rectal method.

The bicarbonate by mouth may also be continued for several weeks at a time without interruption. Patients sometimes get tired of the taste of soda. In such instances it can be administered in tablets of 10 grains each. A purified product should always be used. From 60 to 90 grains of soda a day by the mouth keeps the reaction of the urine neutral or slightly alkaline in most of these cases.

It is now evident that, even without a specific remedy for tuberculosis, we have measures which, if understood and applied rightly at the right time, will help the human organism to overcome early active tuberculosis in nearly all instances. Open air, suitable food, water and sun or air baths, rest and exercise suited to the condition at the time, psychotherapy, and other tonic measures are applicable to all cases for their effect in producing as strong a physiologic equilibrium as possible. In those cases which are beyond the early stage, aside from these measures which produce a general action, pulmonary compression in a few suitable cases and rest and alkalis with the free use of water may be utilized to combat the effect of the toxins.

TUBERCULIN

While there is no remedy extant that may be considered as a specific in tuberculosis in the sense of antitoxin and quinin, there are certain remedies which exert a specific action on tuberculous tissue, and call for discussion because of this fact.

All preparations made from the bacillus and the medium on which it has grown will cause a specific reaction in and about the tubercle, which, when slight, is accompanied by a hyperemia and, when severe, may be accompanied by more marked inflammatory change. If one understands these remedies, and has the patience to administer them carefully, the reactions may be kept under control and a hyperemia may be produced at intervals which brings about conditions favorable to the separation of the tuberculous from the nontuberculous tissue and to the laying down of fibrous tissue which is essential to healing.

Tuberculin preparations are imperfect remedies, but they imitate as nearly as we have been able to do the products which nature provides for curing the disease. It is probable that no patient could overcome a clinical tuberculosis if he were deprived of the specific reactivity with which the tubercle bacillus and its products endow his body cells. He would die of acute disseminated tuberculosis the same as the small child when infected with massive doses of bacilli. Every tuberculous patient treats himself with his own tuberculin, and as a result builds up a specific resistance, which becomes so high that millions of bacilli can pass over the bronchial mucous membrane without infection occurring, while before such resistance had been established a few bacilli would have caused infection.

Immunization is essential to the preservation of the life of the infected patient. The defense against the disease consists not only of an increased resistance to the living bacilli which are found in the body, but also of a protection against the specific reaction which takes place between the patient's bacilli and their products, on the one hand, and his body cells, on the other. We can conceive of the latter being produced by some antibody which is developed by the body cells. That it exists is evidenced by the fact that, while bacilli are going into solution and setting free bacillary products in the tissues and blood stream more or less constantly, particularly in the bodies of patients with advanced tuberculosis, yet the tuberculous tissue is not the seat of continuous focal reaction.

This protection, however, does not seem to extend to the products of other bacilli grown on mediums other than the patient's own tissues; for, on injecting into the tissues a very small quantity of a heterogeneous tubercle protein, a focal reaction may be produced at will. This property by which tuberculin is able to cause a reaction in tuberculous tissue is, in my estimation, the foundation for the healing properties of tuberculin when administered in therapeutic doses.

It is not absolutely necessary that tuberculous patients be treated with artificial tuberculins; but it is my opinion, which has been strengthened by many years of experience, that by using tuberculin we can hasten the formation and increase the amount of fibrous tissue about the tubercle, and produce a firmer and more lasting scar in which to encapsulate or bury the tubercle bacilli. This further can be done without subjecting the patient to any risk. All suggestion of reactivating quiescent foci and causing a spread of the disease presumes upon the wrong use of the remedy.

Where one patient has been harmed by tuberculin, hundreds, yes thousands, have been harmed by overexertion; yet a degree of exertion incompatible with the state of the tuberculous disease is permitted and even prescribed by men who are honestly afraid of tuberculin. Unfortunately, while tuberculin, like exercise, may become a valuable aid to healing when properly administered in the right dose at the right time, few men will study the application of either of these remedies so as to be safe guides for patients. When one does not know the technic of administration, it is better to omit tuberculin in the one case, and stick to rest in the other.

TUBERCULOSIS SHOULD BE TREATED EARLY

That tuberculosis should be treated early should be self-evident, for the earlier any disease is treated the better; but in a disease like this, in which extensions occur and necrosis, with its accompanying symptoms, is favored by time, it is especially desirable that the disease be treated early.

The time between early clinical tuberculosis and the advanced disease may be only a few weeks. On the other hand, it may be months or even years; but the relationship between the percentage of healing and the percentage of failures is reversed when the advanced stage has been reached. Early cases will yield from 80 to 90 per cent. of apparent healings, with from 10 to 20 per cent. of failures; far advanced cases from 10 to 20 per cent. of apparent healings, with from 80 to 90 per cent. of less favorable results. No further argument should be necessary to establish the necessity of early treatment.

NECESSITY OF SUFFICIENTLY LONG TREATMENT

Not only should treatment be instituted early, but it also should be carried out long enough to determine whether the patient can or cannot get well. Most patients suffering from clinical tuberculosis are treated for an insufficient time. The statistics of tuberculosis do the disease, the patient and medical science an injustice, because they are compiled from sanatoriums and are based on an average of the results obtained in all patients who remain in the institutions for three months or more. Thus, we are judging the ability of scientific medicine to cope with this disease by a length of treatment which is wholly inadequate. Therefore, our statistics misrepresent its curability and retard the general acceptance of medicine's ability to restore tuberculous patients to health. It would be no more ridiculous to stop operating on appendixes, gallbladders or gastric ulcers after ten and fifteen minutes, and average the results with those when the operations were complete, in making up the statistics of the curability of these affections, than it is to compute the results of all cases of tuberculosis which are treated over three months in making up the statistics of tuberculosis. Ten minutes of operation for appendicitis is no more ridiculous than three months' treatment of tuberculosis.

Excellent institutions show by this method of computation no more than 30 per cent. of arrestments in early cases. My own statistics of early cases during the last ten years do not show a single failure among the patients who remained in the sanatorium for a period of six months or more. Some of these, however, required nearly two years of treatment to secure a favorable result. In this group, two relapsed but are again well and working. This shows the difference between results based on a given time and those based on a sufficient treatment, regardless of how long it may be.

NECESSITY OF COOPERATION BY PATIENT

The proper treatment may be instituted during the early period of active clinical disease when the process should yield, and it may be carried out sufficiently long to permit a healing to occur, and yet failure may result unless the patient is in earnest and cooperates with his physician. Many patients are by nature passive and so do not make good fighters; others are naturally unwilling to follow a regimen, and, as a result, lessen their chances. An intelligent appreciation of the disease and the conditions to be met in its cure and a willingness and active, aggressive desire to cooperate are among the greatest aids to healing.

ABSTRACT OF DISCUSSION

Dr. William C. Voorsanger, San Francisco: There is hardly anything to discuss in this paper. All I can do is to concur. We should have Dr. Pottenger's optimism. We need optimism in treating tuberculosis. We are not narrow tuberculosis men. If we treat tuberculosis properly, we are clinicians. Every man who treats tuberculosis properly today was an internist before he took up tuberculosis. We do not care what method is used and where it is used, but we do deplore the fact that the patients we get nowadays have advanced cases, and the general practitioner wants to get rid of them before they die to ease his conscience with himself and the world and the family. We do not care if one treats tuberculosis. One can treat tuberculosis as much as one likes; but it should be diagnosed early and treated properly. One should not wait until the man is about to die and ask somebody to come and cure that man and then when that man cannot be cured, say that tuberculosis cannot be cured, and that everybody dies of tuberculosis. Dr. Pottenger stated that every one of his patients with a beginning case recovered. I am not quite willing to admit that. We can divide tuberculosis today, for therapeutic purposes, into two classes—patients who get well and those who will not get well. I believe that for those who will not get well, we can do very little. These are the advanced cases and the patients that improve in the beginning state but with practically no natural resistance. Those patients will not get well. Then there are the patients who, if they give one enough time to build up their lowered resistance, must get well. After all, methods do not count for much. Some of us believe in tuberculin and some do not. It is like treating any other disease. We have our personal beliefs and our personal unbeliefs. What we must realize, though, is that we have no option but to keep on fighting. There are fundamental principles of treatment for tuberculosis. Very early cases will yield to some extent. There are cases that are early but break down in spite of absolute rest and in spite of everything one can do. But those are the patients that will not get well no matter what one does for them. Dr. Pottenger has simply outlined the methods of treatment on which all men who treat tuberculosis must absolutely concur.

Dr. J. J. Singer, St. Louis: For years and years people have been interested in tuberculosis. Some societies have made it their business to bring out tuberculosis papers to be sure of an attendance. We all have one purpose in view, and that is to find out what is new in the line of treating tuberculosis. The old may or may not have been satisfactory, and we want something new. Dr. Pottenger did not give us anything new, but gave us the old, old story. It is our experience that the old, old story is the only true story. The old story of rest, in whatever form, has been the only cure for tuberculosis that has ever been discovered and that has ever served its purpose. Dr. Pottenger was very kind in bringing out the fact that tuberculosis must be treated according to the recognized methods, but that the methods are not used properly. I think he emphasized it sufficiently to have brought home the lesson that if we treat the patients, if we use known remedies, we are going to get results; but we can-

not get 100 per cent. results. Dr. Pottenger expressed my view when he said that certain patients are going to die no matter what one does. That is another problem. There are two classes of physicians treating the disease, the physicians who treat tuberculosis and the physicians who treat general diseases. Whether all in the tuberculosis game are optimists or not I am not prepared to state; but I do say that men who learn tuberculosis, learn the patients with tuberculosis, become optimists. They do see these people get well and get better. So I feel that if a man is pessimistic he at once condemns himself as an improper man to take care of tuberculosis patients. We see patients in almost any condition of tuberculosis, we see them downhearted and see the family depressed; and almost like a miracle, in two or three days, or a week, when they have been established in that communion of spirit between the optimist physician, the patient soon swings over and his pessimism becomes optimism. In regard to pneumothorax, I should like to ask Dr. Pottenger to discuss the reason for the relief of cough. It is my impression that by a steady mechanical pressure cough usually is lessened and the products are easily absorbed and the vicious circle of cough and congestion is overcome.

DR. EDWARD F. WELLS, Chicago: I am an optimist naturally and particularly in regard to tuberculosis. A long time ago, when presiding as chairman of a committee to the health commissioner of Chicago, I brought together a considerable amount of statistics, and at that time I learned with a good deal of astonishment that the prevalence of tuberculosis began to decline as early as 1851, and has been declining ever since. One of the most important features we can bring to the attention of the tuberculous patient is that his malady should be recognized promptly, not ultimately but promptly. If one asks, "How many people in your circle of friends have tuberculosis now?" very few can answer in the affirmative. They know of none. Not more than a generation ago every person in the community knew somebody rather intimately who had tuberculosis. With an early diagnosis and proper management, one of the most important features of which, in my opinion, is that of easy circumstances in which the patient can be surrounded by every means that experience has shown to be useful in the management of that case, there are comparatively few patients under those circumstances that will not recover from tuberculosis.

DR. F. M. POTTENGER, Monrovia, Calif.: Climate is very much misunderstood. Tuberculous patients can recover in any climate. This does not signify that they cannot recover more easily in certain climates, where they can be outdoors all the time, with comfort. Sunshine and altitude have their advantages, but the principal thing in the treatment of tuberculosis is the physician who understands the case, and the patient who cooperates. Tuberculin is a valuable aid in the treatment of tuberculosis. It has a specific stimulating effect on tuberculous tissue, and helps to lay down scar tissue. The reason it is not used more extensively is that it is not studied enough. It takes time and trouble to use it. Some are prejudiced against it. Dr. Voorsanger spoke of treatment by the general practitioner. If we are ever going to make headway, the general practitioner must know he can diagnose tuberculosis. By taking a history and carefully analyzing it, he can come within 80 per cent., at least, of making a proper diagnosis. But he does not have confidence in his ability, and pays more attention to his physical findings and less to the symptomatology. I do not say that in every early case the patient can recover. I said that in every early case in my institution within the last ten years in which the patient stayed over six months, the disease was arrested. What percentage of early cases do you think I am dealing with? One year I did not have a single early case. I average from 5 to 15 per cent. of early cases. I admit that there are certain cases of early tuberculosis that cannot be cured. The age period enters as a factor. A massive infection in children cannot be cured. The question of optimism versus pessimism involves the psychic side of the patient, which can no more be ignored than the physical side. Pneumothorax does throw off and relieve the cough in some cases. The main point I want to make is that there is no ground for the pessimism that surrounds this disease, if it is treated at the right time, sufficiently long, and under right conditions.

INTRAVESICAL MANAGEMENT OF OBSTRUCTIONS IN THE URETER

WITH SPECIAL REFERENCE TO STONE AND STRICTURE *

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It is only recently that the clinician has been devoting serious attention to the ureter. We are now coming to appreciate the fact that not a few cases of intra-abdominal pain are directly traceable to abnormalities in this structure. Scarcely a decade ago ureteral calculus was considered an ailment which demanded surgical intervention. The possibility of there being a definite pathologic entity which might be termed ureteral stricture was but yesterday seriously questioned. Even today hardly a textbook on urology contains within its covers the term ureteritis. Thanks to the courage of such workers as Kelly, Buerger, Bransford Lewis, Hunner, Crowell and many others too numerous to mention, our methods of diagnosis and treatment of ureteral obstructions have reached a plane of scientific exactness which are a source of great satisfaction and pride to all American urologists.

The fact that, by dilation and medicinal treatment to the ureter through the cystoscope, cases of early hydronephrosis, hydro-ureter and pyelonephritis have responded to such a degree as to preclude the necessity of surgical intervention; that many patients with abdominal pain have been completely relieved of symptoms, and that the majority of ureteral stones are today being extracted in this way should furnish sufficient argument for reiterating briefly the most pertinent phases of the subject.

Obstructions in the ureter are either congenital or acquired; are partial or complete; are of intrinsic or extrinsic origin. Aside from calculus and stricture, the ureter may be obstructed because of ureteritis (chiefly of tuberculous origin), a kink over an aberrant renal vessel or because of a ptosed kidney, or external pressure from a tumor, pregnant uterus, enlarged calcareous glands, postoperative adhesions, etc.

For obvious reasons it is most essential to know exactly the nature of the obstructing factor when, in the course of ureteral catheterization, an impediment is encountered. Ureteral spasm, an exaggerated fold or valve in the mucous membrane, a temporary kink or twist, a stiffness or too great a flexibility of the catheter, transient pressure from without—these are among the agents that must be considered as causing obstruction not of pathologic import.

In arriving at a definite diagnosis, the case history, a careful abdominal, vaginal and rectal palpation, the urinalysis (of only catheterized specimens in females), a roentgen-ray study (including pyelo-ureterography), and a cystoscopy with ureteral sounding (by means of wax bulb or acorn-tipped bougie) are collectively employed.

URETERAL STONE

It is commonly observed that stones leaving the kidney become arrested at one of three points of narrowing in the ureter, namely, (*a*) at the ureteropelvic juncture; (*b*) where the ureter crosses the iliac

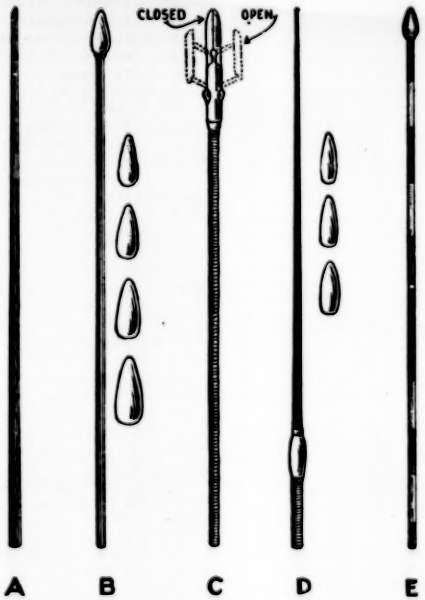
* Read before the Section on Urology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922

vessels at the brim of the bony pelvis, and, (*c*) at the ureterovesical juncture. It is at the last named locality (ureterovesical) that the vast majority of calculi will find lodgment, and Young has classified such ureteral stones as being (*a*) just above the bladder wall (juxtavesical); (*b*) within the course of the ureter in the bladder wall (intramural), and (*c*) at the orifice of the ureter, where it may project into the bladder cavity (intravesical).

There are but few contraindications to the use of the cystoscope in attempting to remove these stones. Whereas the location of the calculus may influence the degree of ease or difficulty with which extraction will be effected, this should by no means deter one from making every effort to deliver it by some nonoperative procedure. The size of the calculus must be taken into consideration. Although larger stones have passed down the ureter, the largest I have removed measured 13 mm. across its transverse axis. Shadows on roentgen-ray films, if measured, will compare very closely with actual size of stone (allowance being made for slight shadow-magnification).

Treatment.—Ureteral calculi are best removed by either mechanical dilation or the injection of an anesthetic or an oil. Dilation is attempted in several ways. Merely passing sized 6 F. olivary-tipped catheters up the affected side frequently suffices. This method is particularly effective if, as Buerger describes, the stone can be "sandwiched" between two catheters. With catheters so placed, Buerger had the happy experience of bringing down the calculus through the ureter, bladder and urethra—all at one sitting. Shifting the axis of a stone, with reestablishment of ureteral drainage, will give patient almost instant relief of pain. The Garceau catheter size 11 F., when it can be introduced past the stone, is the most valuable agent for dilation we have at our disposal. The dilating olives of Buerger and the Bransford Lewis dilator frequently aid materially in hastening the downward excursion of a stone. Livermore has devised an ingenious stone extractor but, as yet, I have had no personal experience in its use.

Some years ago I[1] described a flexible metallic ureteral sound with a filiform guide to aid in surmounting so-called impassable obstructions in the ureter. Constructed of a spiral wire shaft, the same as employed in Buerger's operative instruments, the length of a ureteral catheter, it has a semiolivary tip sized 11 F., the extremity being a screw-thread which joins on to a special ureteral filiform 8 cm. in length. With the filiform and olive well lubricated with a thin film of sterile petrolatum, and advanced up the ureter with a rotary motion, one will often succeed in getting past calculi when other instruments fail. No superlative virtues are claimed for this instrument. It is offered as an adjunct to be employed when the ordinary bougie or catheter fails. Recently I have had constructed some metal olives sized 9, 11 and 13 F. which can be interchanged with the filiform. I propose having screw-threads placed at both ends of olives, making all of them adaptable to the filiform guide. The shaft of this instrument, being flexible, has all the resilience of any catheter, with the added advantage of possessing infinitely more rigidity than a silk instrument.



Instruments used in ureteral dilation: *A*, Garceau catheter; *B*, Buerger olives; *C*, Bransford Lewis dilator; *D*, Walther flexible sound with filiform guide and olives; *E*, acorn-tipped bougie.

Mechanical dilation with any or all of the instruments named above has proved more satisfactory to me than either the injection of an anesthetic (as procain and papaverin) or the instillation of an oil (as sterile olive oil and liquid petrolatum). Catheters can be left in situ for from twelve to twenty-four hours; some leave them in for days. The catheter serves a twofold purpose in that it acts as a drainage tube for the kidney and at the same time produces marked relaxation of the ureteral wall. The secret of getting instruments past stones is to have them well lubricated. Nothing for this purpose has proved so efficient in my hands as sterile petrolatum.

When an instrument encounters an unusual amount of resistance in the lower ureter, if a finger is introduced into the vagina or the rectum so as to serve as a guide, one will frequently be able to get by the obstruction with ease. Stones impacted at the ureteral orifices are best liberated by cutting through the ostium with the high frequency spark, as advocated by Furniss.

The intervals at which ureteral dilations can be given vary considerably. The degree of obstruction, the reaction to instrumentation and the stamina of the patient usually govern. Five-day to fortnightly intervals are those most commonly practiced.

In a series of 118 cases of definite ureteral calculus observed in my practice, 105, or 88.9 per cent., were removed by transurethral instrumental methods. Of

1. Walther, H. W. E.: J. Urol. **2**: 253 (June) 1918.

the remaining thirteen cases in the series, it was necessary to perform ureterotomy in eight because of the large size of the stones present; five other patients either refused cystoscopic or operative treatment, or they were lost sight of before it could be definitely ascertained whether or not the treatment given was of benefit. The number of ureteral dilations required for expulsion of stone varied from one to fourteen. Between the instituting of treatment and the final liberating of the calculus, the time elapsing was from twenty-four hours to eight months. There was no mortality.

URETERAL STRICTURE

Stricture of the ureter, as a definite clinical and pathologic entity, cannot longer be questioned. The condition, as a common cause of abdominal pain in women, is daily becoming more evident. That some of these cases have erroneously been grouped with the bladder neuroses, because of intractable bladder symptoms, recent clinical investigations seem to prove.

The three main etiologic factors of intrinsic narrowing in the ureter are pyogenic infection, calculus and tuberculosis. Whereas the first and last named conditions are well conceded, I wish particularly to stress the point that ureteral calculus is a potent factor in the production of subsequent stricture formation. This matter should be given more attention in taking the history of patients in whom ureteral stricture is suspected. Some of the most severe types of ureteral stricture that I have observed have been in patients who gave a history of having previously passed a ureteral stone. The inflammation produced by a stone remaining lodged for a period in a narrow portion of the ureter, as well as the trauma such concretions produce in merely transcending that structure, is sufficient cause for the development of ureteral stricture.

Pyogenic organisms, in their rôle of establishing foci of infection either in the teeth, tonsils, paranasal sinuses, alimentary tract, prostate, seminal vesicles or kidney, are frequently the cause of ureteral stricture. Whereas focal infection is well recognized as a disturbing factor in many cases of obscure abdominal pain, the ureter as a source of trouble is only too frequently overlooked.

Ureteral stricture cannot be diagnosed with a 6 F. ureteral catheter. The cystoscopist who feels that he can eliminate stricture, simply because the ordinary sized ureteral catheter easily transcends the ureter to the kidney, will frequently fall into error. Kolischer pointed out years ago that the only means of establishing with certainty the presence of ureteral stricture was by the passage of an acorn-tipped bougie up to and through the strictured area. On the withdrawal of such an instrument, a definite "grasp" or "hang" is noted when the acorn encounters the constriction. Repeated soundings in this fashion, noting the same obstruction, in the same location, will establish the diagnosis. Ureterograms, although of value at times, may mislead one. Braasch has called attention to the fact that spasmodic contracture, occurring at the instant the roentgenogram is made, may show "strictures" which in reality do not exist.

Treatment.—Dilation here, as with ureteral calculus, is paramount. The modes of applying it differ but little among cystoscopists. Many doing gynecologic urology favor the straight endoscope of the Kelly type. With such an instrument the wax bulbs in varying sizes are popular for dilating strictures. In the male, in whom the prism cystoscope is generally used, acorn-tipped bougies of silk have proved most satisfactory. All of the instruments advocated under treatment of ureteral stone apply equally well here. The intervals between dilations of strictures are usually about two weeks.

For the few who still doubt that ureteral strictures exist and are accountable for various obscure abdominal symptoms, I will say that one experience in dilation with total subsidence of symptoms (after all other procedures have failed) should convince even the most skeptical.

I have observed sixteen cases of stricture of the ureter. Thirteen occurred in women and three in men. Observers generally have noted a preponderance of these strictures in females. Nine of the thirteen women had undergone laparotomy (in five of the nine cases, patients had been operated on twice) without relief of symptoms. Seven women and two men had previously passed ureteral stones. Symptoms had persisted, in this small series, for from four months to eleven years. Ureteral dilation gave complete relief in all of my cases. The maximal number of dilations given in any one case was eleven. Just how often, and for what length of time, dilations will have to be persisted in remains for the future to unfold. Hunner has patients remaining free of symptoms who received dilations just before his initial report in 1911. After relief of symptoms and after the ureter had been dilated to its maximum, yearly dilations over a period of five years should be a sound dictum to follow.

CONCLUSIONS

1. Many cases of obscure intra-abdominal pain are due to obstructions in the ureter. Cystoscopy and ureteral sounding should be employed in all cases in which the symptoms of abdominal distress cannot be traced to some definite surgical condition distinct from the urinary tract.

2. Stone and stricture are the two principal factors in the causation of ureteral obstruction.

3. Approximately 90 per cent. of ureteral stones can be removed by nonoperative means. Transurethral instrumental ureteral dilation is rational, is safe in the hands of the experienced, and is efficient in its results.

4. Ureteral stricture is a definite clinical entity and merits more careful consideration, especially in dealing with abdominal pain in women. Thorough dilation produces definite and apparently lasting benefit.

1321 Whitney-Central Building.

ABSTRACT OF DISCUSSION

DR. L. R. WHARTON, Baltimore: This is a new subject, and in all new subjects there is great need for conservative, scientific and constructive work. We should all be careful in handling ureteral work lest we let our enthusiasm control our judgment. This needs more investigation than any other subject interesting urologists at present. In the first place, every patient with symptoms suggestive of ureteral stricture or stone should be subjected to a general examination. There may be some relationship between general conditions and the local lesion, the importance of which we do not yet realize. It has been pointed out that focal infections have had a definite influence on the course of the disease. Whether we accept this as a definite source of disease or not, this phase should be investigated in patients with ureteral stones and stricture. Secondly, it is important not to overlook any lesions that may be situated in the pelvis along the urinary tract. It has been pointed out that infections may travel along the lymph nodes to the ureter, and the ureter at times becomes infected in this way. The lymph nodes must be infected from

some focus, and this primary lesion may be in the pelvis or lower abdomen, the fallopian tube, appendix, cervix or broad ligaments. Furthermore, abnormalities in these structures may give rise to symptoms that cannot be differentiated from genuine ureteral pain, for pelvic pain is not specific. Unless we get to the bottom of the situation by the examination and proper treatment of lesions in the associated viscera, we shall incriminate many ureters that are not in themselves diseased. One will frequently find that if one treats the ureter and neglects the associated lesions the results will be temporary and the disorder will recur, whereas if one eliminates focal infections, cures associated lesions and then, if necessary, treats the ureter itself, the results will be more permanent. In the third place, every patient in whom one suspects the presence of stone or infection in the urinary tract must be subjected to a complete urologic examination. Finally, as to the treatment of the ureter itself, if one wishes to dilate it, I would suggest the use of well lubricated bougies. Using the Kelly cystoscope in women, it is my custom to pass a bougie, measuring not more than 3 mm., leave it in the ureter for a minute or two, withdraw it, and immediately introduce a larger one. I repeat this treatment in ten days or two weeks, and it is surprising to find that the patients do not have the severe pain that follows dilations with the wax bulb. The reason is, the dilation by a bulb made of wax or silk is effective only while the short bulb is traversing the affected area, the dilation is much more rapid, and it involves severe trauma. With the bougie, however, the dilation is slower, is more prolonged and causes less trauma. I have been surprised to find that many patients going to bed with hot water bottles ready and hypodermics prepared for them after such treatments have not had to use either, and have been relieved just as satisfactorily as with the wax bulb method.

DR. JAMES A. GARDNER, Buffalo: I think that Dr. Walther is very modest about the instrument he has shown, which is practically a filiform bougie attached to a cable. I have used it with great satisfaction. With such a filiform that can be shaped into a bayonet end, one can push by the stone. If a small bougie or catheter is passed and left for twenty-four hours, a larger size can easily be passed with ease. I think that this filiform can be passed more easily than a catheter. In my opinion, Dr. Walther's instrument is one of the best aids in the removal of ureteral stones.

DR. ROBERT H. HERBST, Chicago: A fair proportion of strictures of the ureter in the male occur at the lower end of the tube, and many of these are caused by extension of infection from the seminal vesicles. The term occlusion rather than stricture describes the changes that occur in the ureteral wall. Pathologically, there are three types of obstruction: (1) Congestion in which there is a swelling of the ureteral wall often accompanied by edema. These usually subside spontaneously. (2) Inflammatory type in which there is an infiltration of the wall of the ureter. These may disappear following treatment directed to the infected seminal vesicle. (3) Fibrous strictures which require radical dilation with bougies. Those which do not dilate readily may be cut by the introduction of a hook shaped knife into the lumen of the ureter, incising the involved area by withdrawal of the knife. This instrument may be used through an operating cystoscope. In order to avoid cutting beyond the mural portion of the ureter, the incision should be limited to the last 2 cm. of the ureter.

DR. ARTHUR L. CHUTE, Boston: I have enjoyed Dr. Walther's paper very much, but it seems to me that certain words of caution should be given. I do not think that Dr. Walther gave us any definite rule as to which cases to dilate and which not. He says that 90 per cent. of the stones will be passed after dilation of the ureter, but I am in doubt as to whether it is wise to use this method in 90 per cent. of ureteral stone cases. I believe that if there is great pain, and continued temperature elevation, with a moderate amount of pus in the urine, we should not wait to dilate a ureter but should remove the ureteral stone surgically, no matter what part of the ureter it occupies. I recently removed a ureteral stone that was opposite the transverse process of the third lumbar vertebra. This patient's symptoms had been going on for some time, and the ureter was so thickened that it looked almost tuberculous. There was a history of attacks of fever occurring over several years, and I believe that if this patient still retains a useful kidney, there is a very considerable probability that he may develop a stricture of the ureter because of the long time the stone was allowed to remain. It seems to me that in the presence of fever and pus in the urine one should not wait. Then there are the little, irregular stones, seen often low in the ureter; they have little prongs that extend into the ureteral wall and hold them fixed. I doubt whether they are favorable ones for dilation. While Dr. Walther's method has great possibilities, I doubt that it should be applied to every stone in the ureter.

DR. BENJAMIN A. THOMAS, Philadelphia: Like Dr. Chute, I do not wish to throw cold water on the many valuable and indispensable intra-ureteral manipulations. I have seen many of these cases and wish to throw out a word of caution, because we can go too far not only by waiting unduly long and repeating too often the ureteral manipulations, as Dr. Chute says, but by too vigorous intra-ureteral instrumentation, which may lead to serious and even fatal results. One of my colleagues two or three years ago had a very unfortunate result from the use of the Bolucci catheter—that one with a short, whalebone filiform tip. This is certainly a very dangerous instrument, and in this instance caused perforation of the ureter, peritonitis, and death of the patient. So I feel that we should not postpone too long real surgical intervention in many of these cases, and it is up to us to decide very often which is the safer and better procedure, radical surgery or intra-ureteral instrumentation.

DR. BENJAMIN S. BARRINGER, New York: I have not seen any bad results from the removal of ureteral stone by dilation. I have seen two cases of paracystitis following operation for ureteral stone caused by a temporary closure of the opposite ureter. I have seen the kidney from which a ureteral stone came sacrificed and the patient very nearly sacrificed. I do not see why one cannot cause the fever and pyemia to get better with treatment—water, hexamethylenamin, etc.—and then try nonoperative removal of the stone. Just a point about the treatment of the strictures at the internal ureteral orifice, sometimes causing a ureterocele. I think that the mere cutting of the narrow ureteral orifice is not enough. I have done that with the Buerger instrument, but I think that we have to treat this orifice either with fulguration or bite out a piece with cutting forceps. I have done several of these, and for a long time the ureter has remained open.

DR. HENRY G. BUGBEE, New York: Not infrequently, when we first see an impacted stone in the ureter we shall find a large stone in the intramural portion. It is interesting to see how large a stone will be passed following slight manipulation. I saw such a case recently with fever, pus, and a large stone in the intramural portion. The history dated six years, and yet by simply passing a catheter the stone was loosened, the ureteral lumen was enlarged by cutting the wall at its orifice and the stone dropped out. I agree with Dr. Barringer that we cannot have definite rules in these cases, but think that they are all worthy of at least one or two trials.

DR. BRANSFORD LEWIS, St. Louis: If we compare the results of a number of cases of stones removed by the intravesical and cystoscopic method with stones removed by radical operations, the comparison is much in favor of the cystoscope. Many of these cases are subjected to the open operation. That held good in former years more than now, however, when surgeons gave no chance to the possible passage of the stone. A ureteral calculus would occur, the patient would consult the surgeon, and he would shoot him up to the hospital without any intervention at all, when a few days might have seen the entrance of that stone into the bladder. Cases have been shown in which even slight manipulation will release the stones and let them drop into the bladder. Since 1904 I have tried to develop a more positive plan of attack than these. I then submitted the ureteral dilator, ureteral forceps and scissors and later the ureteral knife for prosecuting such work. I have had some interesting specimens showing that the pathologic condition emanated from a stricture at the ureteral orifice. I had a physician from Illinois who died in coma within two days after coming in; nothing could be done for him, and yet the whole trouble (a large pyonephrotic kidney) resulted from constriction at the orifice. I have another case in which the man had been an invalid for ten years. He had

an enormous pyonephrosis, and the whole trouble was a stricture at the orifice of the ureter. The main thing is the diagnosis. In many cases I cannot tell whether it is stone or a stricture until I have studied it thoroughly.

DR. VICTOR D. LESPINASSE, Chicago: I think that we are all agreed that the intra-ureteral manipulation is a good method to remove ureteral stone, and that we should bear in mind that we must not let mere mechanical ingenuities run away with us and try to use them in removing every stone. The type of cases in which we should use the manipulation are the small stones, under 1 cm., when there is no infection, or very slight infection, and we must consider the reaction of the infection to the stone in the ureter. If there is infection with a stone in the lower end of the ureter, probably the best way to remove it is to dilate; and then the obstruction is drained, the fever is less and the patient recovers; whereas, if there is the same clinical picture with a relatively large stone high up in the ureter, we know that stone cannot be teased down without a good deal of pain and colic, and all this time the infection is active and progressive. These points should all be given careful consideration when we are considering future treatment, and should be weighed carefully before we decide to continue ureteral treatments or perform an open operation.

DR. HERMAN L. KRETSCHMER, Chicago: I wish to agree with the points brought out by Dr. Chute and Dr. Lespinasse, and to call attention to the fact that one should not treat these patients in a routine manner and without consideration. Occasionally one encounters a patient who does not tolerate instrumentation, so that each treatment is followed by chills, fever, bleeding, local pain, etc. In these cases I think that operation is preferable to subjecting the patient to instrumental manipulation and to having the patient severely upset by the treatment.

DR. H. W. E. WALTHER, New Orleans: It is true that we cannot have any definite, fixed rules in regard to the number of dilations to give a ureter before operating on it for calculus. I do not think that anybody would be prepared to give us such a rule, much as we should like to have it. I agree with Dr. Chute and Dr. Barringer to the extent that we must not let these patients suffer indefinitely. I brought out in the paper the point that usually the passing of the catheter past the stone and leaving it in place will relieve the patient of fever and pain. But if we do not get by the stone and there is prolonged fever and pain, I agree with Dr. Chute that operation should be done and that we should not continue indefinitely with cystoscopic methods. In regard to Dr. Wharton's very important point relative to focal infection and its bearing on stricture, I had to leave that point out of the paper because of lack of time. Many of us do not recognize these infections as the cause of the stricture, and that is where we do not complete our job. Dr. Lewis and other members brought out certain facts about intravesical surgery which will be borne out by experience if urologists will attempt, by safe means, to get up the ureter. There are many little tricks we all learn by experience, and the kind words that Dr. Gardner said about my little instrument were said because it has helped him to some extent.

Thymus Juice.—The thick, milky juice that often runs out when a voluminous thymus gland, normal or pathologic, is cut through in fresh condition has not infrequently, not only in older works but even of late, been called a thymus secretion. Microscopic examination of the liquid shows, however, that it consists chiefly of lymphocytes in large numbers, a fact which has been known for a long time. If corresponding places in the fixed organ are investigated in sections, one finds that the lymphocytes are collected in certain, generally rather circumscribed, regions of the medulla, as a rule corresponding to the central parenchymatous cord. It will be seen that in doing this they have dispersed and broken asunder the ordinary medullary elements. The significance of the local surpluses of lymphocytes in the medulla and what has produced them is an unsolved problem. One thing, however, is certain: they cannot be considered as products of any real secretory process in the organ.—Hammar, *Endocrinology*, November, 1921.

A SUGGESTED CLASSIFICATION FOR ANORECTAL PROLAPSE *

COLLIER F. MARTIN, M.D.
PHILADELPHIA

The terms prolapsus and procidentia, while identical in meaning, by common usage have come to represent two different types of protrusion of the lower bowel. The term incomplete prolapse has been given to a condition in which there is a downward displacement of the skin lining the anal canal or the rectal mucosa. In contradistinction to this, the term procidentia has been used to describe a downward displacement of all the coats of the bowel.

As the term procidentia has for many years been used to describe the complete form of prolapse, it would seem perfectly feasible to use the word prolapse to signify those displacements of lesser extent in which the tissue involved is comprised of only the skin or mucosa. This would obviate the necessity of using the word "incomplete." In this paper, then, the term prolapse will always be used in the sense of incomplete prolapse, while the word procidentia will be used when all of the coats of the bowel are involved.

It is impossible to go into the question of etiology of prolapse in the limited time allotted; the subject is too complicated. Essentially, a prolapse is caused by an increased mobility of the skin or mucosa on the underlying tissue, while in procidentia the main defect seems to be one of stretching out, or tearing off, or the absence of, the normal fascial, muscular or peritoneal supports of the bowel. Whether we classify a rectal procidentia as a form of hernia, or a pelvic procidentia as a form of intussusception, is of little consequence for classification, as the two conditions may be present at the same time.

Under the heading of procidentia, Tuttle has recognized three types, which unfortunately are called first, second and third degree procidentias. In teaching, it is found very difficult to make clear the conditions present in these types, unless there is a more distinctive method of description.

It is my contention that the terms first, second and third degrees of procidentia should not be employed, but that the condition should be described according to the anatomic tissue displaced. If the student is made to understand that the displacement is either of the anal skin or of rectal mucosa, or of all of the bowel walls of the rectum or colon, or of all combined, he certainly has a clearer conception than would be obtained by any other classification. To illustrate:

We frequently have a displacement of the skin lining the anus so that the anorectal line is dislocated downward, producing a large fold of skin about the aperture. This is an anal prolapse. Of course, we understand that when the anorectal line is displaced some of the rectal mucosa must be dragged down with it, so this portion would logically be a rectal prolapse. As the mucosa does not appear on the outer surface, we disregard it and simply classify it as above. However, should the rectal mucosa be displaced so that it appears outside the anal margin, along with the skin which formerly lined the anal canal, we would then have an anorectal prolapse. In a fair percentage of cases, the anal canal

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

remains intact, the skin lining occupying its normal position. The mucosa protruding through the aperture would then represent a true rectal prolapse.

The two types could be differentiated by the fact that in the first case the anorectal line, with the semilunar valves of Morgagni, are seen at the margin of the anus, while in the other a deep sulcus (its depth being limited by the length of the anal canal) would be found surrounding the protrusion of mucosa. These two types are frequently found associated with hemorrhoids, of either the external or internal type, or both.

In all cases of prolapse there is a marked tendency for the protruding masses to take the form of small lobulations, the separation between the lobules forming lines radiating from the center of the anal canal. The so-called hemorrhoidal prolapse is probably the most common example of this condition. In procidentia the mucosa will be found puckered up on the underlying muscular wall; hence the peculiar form of concentric striations seen in this form of tumor.

In procidentia a very different condition exists as contrasted with a prolapse. Here we have a deficiency or absence in both the active and passive supports of the rectum and pelvic colon, the active supports being represented by the muscular fibers of the intestine itself, the external sphincter muscle, the levator ani muscles, and the rectococcygeus muscles. According to Tuttle, the passive supports are represented by the connective tissue fibers which bind the rectum to the surrounding organs or tissues to the elastic tissue bundles formed by the peritoneal folds and to the blood vessels which supply the organ. A very fair percentage of these cases are of congenital origin. In other words, while the procidentia may not appear until late in life, there may never have been present a normal architecture of the supporting tissues. The traumatism of a straining defecation, the trauma of labor, the presence of foreign bodies, such as tumors, or stricture, may increase this deficiency, or, in themselves, by mechanical action may so stretch or tear the normal supports as to produce procidentia.

According to Tuttle, the first degree of procidentia "begins at the margin of the anus, and its external surface is continuous with the skin surrounding this aperture." He says that the outer surface of this tumor is covered by skin. Actually, there is a prolapse or displacement of the skin lining the anal canal, which forms the outer surface of the tumor and a procidentia of the rectum itself. There could not be a procidentia of the anal canal because the external sphincter could not be displaced.

A statement has been made that the term prolapse of the anus should not be used, since the anus is simply an aperture, and cannot be displaced. The same thing would hold true of the rectum or pelvic colon; they also are apertures. The aperture cannot be displaced, but certainly the tissues surrounding them can be moved upward or downward for a considerable extent. In other words, the aperture is not displaced but the lining is.

Tuttle further says that the second degree procidentia "begins at a point more or less above the anus, and, descending through that portion of the gut which remains in position, protrudes through the anal orifice." He lays stress on the point that mucosa forms the outer surface of the tumor mass, and between it and the anal margin is a deep sulcus, the deepest portion of it representing the anorectal line. In this type we have no displacement of the lining of the anal canal, but simply have the procidentia of the rectal wall through the anal aperture. This we classify as a rectal procidentia.

Further, the same writer classifies a procidentia of the third degree as one which "begins high up in the rectum or sigmoid flexure and extends down into the ampulla of the rectum, but does not protrude through the anal orifice." He says, further, that, "speaking from a mechanical point of view, this degree is only the first step of the second degree of procidentia, only it is higher up, and in the large majority of cases never proceeds to actual protrusion through the anus."

To the average student, this is an extremely complicated description. After all, the condition is very similar to an intussusception. It is simply a sliding downward of the pelvic colon, which may or may not protrude through the anal canal.

Instead of the term third degree procidentia, I suggest the term pelvic procidentia, as the pelvic colon is certainly the portion of the bowel displaced. Should this pelvic procidentia increase to such a size that it appears externally, and with it drags the rectum itself, then the term pelvirectal procidentia, or rectopelvic procidentia would be logical.

To my mind, the only difficulty to this entire classification is the distinction between the words prolapse and procidentia. Until some new term is coined to take the place of the word prolapse, it is felt that this word may be used to refer only to the incomplete variety, while the term procidentia should be used only for those cases in which all of the bowel walls are involved.

We then have two varieties of each, the anal and rectal prolapse, or a combination, and rectal or pelvic procidentia and the combination of the two, or we might have a rectopelvic procidentia associated with an anal prolapse.

ABSTRACT OF DISCUSSION

Dr. William H. Stauffer, St. Louis: I think that we have all appreciated a better designation of the disease condition involved in these cases. First of all, the nomenclature has improperly designated the anatomy of the bowel, and, secondly, it has inadequately described the pathologic changes involved. Dr. Martin has done well in simplifying the confusing terms we have been using for so many years. His modesty probably prevents him from going a step farther and simplifying things just a little more. I see no occasion for retaining the word procidentia. We could use the words complete and incomplete, with each designation specifying the pathologic changes and the anatomy involved.

Dr. Granville S. Hanes, Louisville, Ky.: When we go back to the earlier textbooks which deal with the anatomy of the large bowel, we find that it is not possible to determine where the sigmoid has its beginning, or where it terminates. More recently, however, Treves and others have suggested definite points at which this portion of the large intestine begins and terminates, which have been quite universally accepted. Martin is to be commended for attempting to adopt terms that may more accurately describe various types of rectal prolapse. There is so much confusion in the use of terms employed to indicate the anatomic parts and their relations to one another and also the pathologic states of the tissues in the region of the rectal outlet that it becomes at once a difficult task to standardize the numerous terms that may be accepted at the exclusion of all others. The fact is that the anatomic structures, their exact physiologic functions and the many disease conditions of these parts are most difficult to study in the living subject. This undoubtedly, in a measure, accounts for the lack of uniformity in the use of terms. The levator ani, which plays such an important rôle in certain types of rectal prolapse, as well as many other

affections of these parts, is difficult to understand, both from its mechanical arrangements and from its physiologic functions. With reference to anal prolapse, we know that in a perfectly normal state of the tissues the rectal mucosa everts when the bowels act, but that if these structures are in a state of chronic inflammation the anal muscles are hypertrophied and tightly contracted, with the result that the mucosa does not protrude at the time of defecation. My conception of prolapsus of the rectum is that of a protrusion of the rectal mucosa or that of the mucosa with varying degrees of protrusion of the rectal walls. In hemorrhoids there is a protrusion of the rectal mucosa, but the dilated blood vessels form the chief point of interest, and when they are properly cared for the prolapsing mucosa gives no concern. I hope that Dr. Martin will continue his efforts, for they are in the right direction and I am sure that he will succeed in relieving us of numerous difficulties.

DR. C. F. MARTIN, Philadelphia: Classification is simply a matter of geography. That is all I was talking about. We must represent a thing geographically in order to know what part of the body we are talking about. I have no objection to Dr. Stauffer's amendment. I do not care whether we use the terms prolapse complete and prolapse incomplete, or procidentia. It makes no difference, provided we all understand what we are talking about.

Clinical Notes, Suggestions, and New Instruments

MODIFIED KEIDEL TUBE FOR COLLECTING BLOOD SPECIMENS

C. C. YOUNG, LANSING, MICH.
Director of Laboratories, Michigan Department of Health

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Modified Keidel tube for collecting blood specimens.

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Until this type of vacuum tube is in general use, we are inclined to discourage the use of vacuum tubes by physicians, although we realize how much easier it is to collect the specimen of blood in this manner than by the use of a sterile hypodermic syringe.

Evidence for Cancer Origin.—There is strong evidence that redifferentiation of epithelial cells does take place in consequence of long continued demands upon one of their functions, that of repair, involving proliferation, and that processes creating this demand may be directly responsible for the origin of malignant new growths.—Wolbach, *New Growths and Cancer*, Harvard University Press, 1922.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

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THEOPHYLLIN.—See the U. S. Pharmacopeia under Theophyllina.

Theocin.—A brand of theophyllin-U. S. P. prepared synthetically.

Manufactured by The Bayer Company, Inc., Rensselaer, N. Y. (Winthrop Chemical Co., New York, distributor). U. S. patent 716,934 (issued Dec. 30, 1902; expired). U. S. trademark 39,135.

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SATURDAY, AUGUST 26, 1922

SAFETY IN FLYING

It is well known that accidents during flight are not always the result of faults in the machine or in the atmospheric conditions. Statements from all countries are to the effect that of the total number of fliers incapacitated for flying service during the war, about 8 per cent. were rendered unserviceable because of mechanical shortcomings of plane or engine; adding to this 2 per cent. incapacitated by the enemy, the remaining 90 per cent. represent trouble in the flier himself.

With the armistice, the urgent need for aviators ceased, and economy demanded that experimental work in problems of flying be cut to a minimum. But the concentrated work of the few years of warfare had borne fruit. It had interested many men of no physiologic training in problems of equilibrium. It had concentrated the attention of not a few able physiologists on the basic problems of balancing. The choosing of fliers was no longer haphazard, but guided by well selected tests. Yet those best acquainted with the application of these tests are not fully satisfied. Many problems remain unsolved. France and England have awakened to the need of further investigation. France proposes to establish aero stations along the great international roads, each with a complete medical unit. That country has also established a laboratory for the study of physiologic problems connected with flying. In Europe, governments have vied with commercial houses in devoting money to further by scientific observations what will be an important means of rapid communication in the near future. It is a sad commentary on our commercial progressiveness that this country, the birthplace of the aeroplane, is far behind the leading European countries. It is notorious that, in America, with an expanse offering a commercial area well fitted for aviation, enterprise has been laggard. All the important towns of central and eastern Europe are linked together by regular aeroplane service with flights at least two or three times a week, and in some cases twice a day.

Aviation is in its infancy, but its development is a certainty. This development will come with the assurance of safety. Aviation can be made safer by perfecting the machine and choosing the efficient pilot. Experience has taught that the latter is the greater essential. "The pilot of the aeroplane is the heart and brain of the whole flying apparatus. The engine may fail through lack of care, but the pilot brings the machine safely back to the aerodrome. A carelessly inspected wire may snap in the air and nothing serious results. When the pilot breaks, even momentarily, nothing is left to direct the flight; and the plane and engine, no matter how well they have been cared for, crash and are lost." [1]

The fit pilot can be selected only by examination based on a scientific knowledge of the demands made for a safe flight. These demands and how they can best be met are not wholly known and are awaiting investigation. The United States flying corps officers are doing well with the equipment placed by the federal government at their disposal. In nongovernment circles, many devoted scientific investigators are striving under financial difficulties and even personal sacrifices to see that this country is not behind in aviation. The National Research Council has a committee working on the problems involved, the solution of which promises important information primarily regarding safety during flight. Medical science will benefit by the light thrown on obscure physiologic problems. These investigations must be carefully carried on by competent observers. While safety is involved, so also is commercial development. The latter cannot be expected to succeed if left to the federal government. Success can come only from cooperation of state departments and individuals of influence and authority. We have aero clubs; are they interested? Are our large commercial corporations participating in the development of safe and speedy transportation?

One lesson of the war was that fliers, even the best of them, will at times grow stale. It ought to be imperative that pilots submit themselves periodically to medical examination as a protection to themselves and to others.

THE FAT REQUIREMENT OF CHILDREN

A study of the scientific literature of nutrition during the last quarter century or longer will reveal a large amount of attention paid to the standards of requirement. The question as to how much is desirable or how little is essential recurs again and again, whether in reference to calories, protein, inorganic nutrients, vitamins or to some other factor related to the diet. To many persons, and particularly to physicians of the "old school," it has doubtless often seemed as though the measurement of minimal or optimal nutritive needs has been unduly emphasized. We are reminded that, thanks to dependence on his instincts, tempered with a little common sense, man has survived through the ages without recourse to the balance or the calorimeter;

1. Air Service Medical, War Department, Division of Military Aeronautics, Washington, D. C., 1919, p. 12.

hence the futility, if not actual danger, of turning to new guides to adequate nutrition. There is undoubtedly a vein of truth pervading this argument; but most of us moderns are prone to forget the enormous social, national and economic changes that are tending in numerous often unsuspected ways to alter our choices, to restrict our preferences, or even completely to thwart our instinctive demands. The food supplies of millions have become modified in artificial ways within comparatively brief periods. Refrigeration, rapid transportation, sterilization, desiccation, milling—these are a few of the words that will suggest some of the almost revolutionary changes in the food customs and dietary possibilities of recent years.

That instincts, habits and fortuitous circumstances by no means always lead to the most ideal results is shown in many fields of interest where nature has been "improved upon" by the scientifically warranted procedures of human selection. Hence there need be no incongruity in seeking newer or better standards in the midst of a novel and artificial environment. In the science of nutrition, the standards for the energy requirement have been the subject of helpful debate in recent years. With respect to calories and protein, it is possible today to make statements that are likely to command approval the world over. The problem of fat and carbohydrate and the optimal quantitative conditions for their participation in nutrition is by no means equally clear. On the one hand, we are reminded that shortage of fat in the diet may lead to disturbances of metabolism, while investigations on animals bring the conclusion that "if true fats are essential for nutrition during growth, the minimum necessary must be very small." [1] The issue is further complicated by the fact that some of the common dietary fats are carriers of vitamin A, and thus play a part only indirectly related to their rôle as sources of energy.

In the absence of more convincing evidence, Holt and Fales [2] have followed the statistical path to ascertain what healthy children are accustomed to consume. They found that the older children studied by them took on the average more than 3 gm. of fat per kilogram daily when under 6 years of age, and about 3 gm. during the remainder of the growth period. They regard it as rational to follow this lead and, furthermore, to supply as much as 4 gm. of fat per kilogram daily to children at 1 year of age. Admitting frankly that many of the functions of fat still are the subject of debate, these pediatricians caution against such reductions in fat intake as Pirquet [3] has sanctioned on the ground that carbohydrate may replace it without harm. Holt and Fales are convinced that fat has an important influence on mineral metabolism in children, and that it helps to maintain normal physical, bacteriologic and chemical conditions in the intestine. They believe, further, that a great reduction of fat in the diet increases the susceptibility to infection, especially to tuberculosis. Such contentions, as well as the somewhat gratuitous assumption that fat is probably necessary for proper digestion and utilization of protein, may justly be debated. Perhaps, too, some heed should be given to the widespread clinical impression that fat is often responsible for some of the common digestive disturbances of infants. Nevertheless, the tentative conclusions of Holt and Fales demand respectful hearing. While it may not yet be established, they say, that a large amount of fat is essential in the diet during growth, there are so many reasons for a liberal allowance of fat, and there is so little evidence that this is harmful to children with normal digestion, that it does not seem wise with our present knowledge to reduce the fat much below the amount which healthy children usually take; while to exclude it entirely from the diet seems unjustifiable and hazardous.

1. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. 45:145 (Dec.) 1920.
2. Holt, L. E., and Fales, Helen L.: The Food Requirement of Children, III, Fat Requirement, Am. J. Dis. Child. 23:471 (June) 1922.
3. Pirquet, C.: System der Ernährung, Berlin, 1917.

ECONOMY AND EXTRAVAGANCE IN METABOLISM

The failure of many persons to gain in weight readily, despite an apparently liberal or even overgenerous intake of food, has long been a puzzle to those who have been taught to accept the conventional "laws" of nutrition in a rigorous formulation. For such the body is pictured as an energy-converting machine with demands determined within narrow limits of variation by the factors of size and activity. With the latter accurately ascertained, any excess of food fuel is assumed to be stored and thus lead to increment in body weight; any deficit, on the other hand, must be supplied by the tissues themselves and lead to decline. How, on this hypothesis, are we to explain the experience of those perhaps exceptional but by no means unheralded persons, who "eat and remain thin"?

Students of the energy transformations in the organism have long recognized conditions under which the metabolism is increased beyond what may be estimated as the actual requirement of the body. Even before the modern introduction of the calorimeter, physiologists had come to believe that protein food somehow "stimulates" metabolism; indeed, the increase of the protein factor in the diet was for this reason at one time made the basis of certain forms of the treatment of obesity. Later, the fact that food per se can increase the resting metabolism, the effect being particularly noticeable for protein foods, became demonstrated beyond conjecture. Rubner designated this phenomenon the "specific dynamic action" of foodstuffs—an expression that is far from self-explanatory. The possible work of the digestive glands or the excretory organs will not account for the increased heat output

after a meal which more than covers the calorific needs estimated as the basal metabolism. Somehow the chemical reactions of the body speed up when the products of digestion begin to circulate.

In recent years, evidence has not been wanting that, instead of being fixed, the plane of metabolism may be altered by undernutrition. Benedict and his co-workers in this country found it lowered when, during the war, a group of volunteers reduced their food intake and, in consequence, also their body weight. The pulse rate was notably lowered in many of these persons. In experiments on themselves the German physiologists Zuntz and Loewy [1] ascertained that their metabolism following restricted diet imposed by food rationing decreased below what their altered body weights might have led them to expect. This apparent protective factor leading to great economy in the use of energy was attributed by Zuntz and Loewy to a great decrease in their active protoplasm. Other instances of an advantageous adjustment of metabolism to food shortage might be cited, notably in the case of chronic invalids who experience prolonged illness under conditions of underfeeding enforced by pathologic circumstances.

The reverse condition—the "speeding up" of metabolism in order to dispose of excess of available nutriment—has had few experimental demonstrations, although it has often been conjectured and spoken of as "luxus consumption." Recently we referred to investigations of Gulick [2] which scarcely permit of any other interpretation. Careful calorimetric observations by Eckstein and Grafe [3] of Heidelberg, with which we have just become conversant, demonstrated on dogs that in cases of prolonged overfeeding the body works more and more uneconomically so that a not inconsiderable part of a superfluous diet may be wastefully burned up at a rate far beyond that which would be encountered in the normal or basal metabolism of the same individual. In other words, only a part of the unrequired surplus of food energy is stored; the rest is wastefully destroyed, relieving the body of the necessity of being encumbered by it. If the conditions in man are analogous, it is conceivable that persons of certain "metabolic temperaments" fail to grow fat because the overfed organism, in them, wastes rather than stores the surplus of intake. Eckstein and Grafe have found that such extravagance of metabolism after chronic overfeeding can no longer be noted in animals that have been deprived of their thyroid glands. Perhaps, therefore, in ultimate analysis, the latter act as regulators of primary importance in determining the possibilities of crediting surplus food intake to tissue storage on the one hand or metabolic waste on the other.

1. Zuntz, N., and Loewy, A.: Berliner klin. Wchnschr., 1916, No. 30; Biochem. Ztsch. **90**: 244, 1918.
2. Underweight and Overnutrition, editorial, J. A. M. A. **78**: 1541 (May 20) 1922.
3. Eckstein, E., and Grafe, E.: Weitere Beobachtungen über Luxuskonsumption und ihre Entstehung, Ztschr. f. physiol. Chem. **107**: 73, 1919.

Current Comment

THE CENTENNIAL ANNIVERSARY OF A FAMOUS ACCIDENT

American medicine is still too young to be expected to claim many triumphs of scientific discovery for itself; nevertheless, in the earlier history of the progress of our profession in this country the novel researches on digestion in man, of the "backwoods physiologist" and army surgeon at Mackinac, Dr. William Beaumont, stand supreme. It was one hundred years ago this summer that the great opportunity came to this modest practitioner, whom Sir William Osler designated the pioneer physiologist of the United States and the first to make a contribution of enduring value. In 1822, just ten years after he was granted a license to practice "physic and surgery," destiny let fall, in the words of Beaumont's biographer, "the opportunity which he recognized, grasped and improved with a zeal and an unselfishness not excelled in the annals of medical science." Through the outcome of the accident to the Canadian lad Alexis St. Martin whereby he was left with a permanent fistulous opening in his stomach, it became possible for Dr. Beaumont, his physician and friend, to start a series of direct observations on the nature and functions of the gastric juice and the phenomena of gastric digestion. Of these investigations Vaughan has remarked that Beaumont made such an exact study of the physical and chemical natures of the gastric juice that, with the exception of the discovery of pepsin, the closest research of modern times has added little to the work done by him. And Myer has pointed out in his admirable biographic study of Beaumont that a comparison of the latter's deductions with those of the most recent workers on the physiology of digestion shows that he anticipated some of their best results, notably the researches of Pawlow on the work of the digestive glands, Cannon on the mechanics of digestion, and others. Thus the accident of a century ago remains as an illustration of how research of the foremost type can be conducted under the most discouraging conditions. The prime requisite for success, when the opportunity comes, is a "prepared mind."

ROENTGEN-RAY NEOPLASMS

Knowledge of the frequency with which carcinoma of the skin has followed chronic roentgen-ray dermatitis has played an important part in adding to our understanding of the pathogenesis of tumors. It is less generally appreciated that more deeply seated neoplasms may be produced by the same agency, although apparently not so frequently. Several years ago, von Jagic [1] pointed out that persons exposed to roentgen rays commonly show a greater or less degree of lymphocytosis, as do experimental animals exposed to the same influence or to radium, and that at least a few cases of lymphatic leukemia have been observed in workers exposed to these lymphocyte stimulators. The occurrence of the lymphatic leukemia is presumably to

1. Von Jagic, Schwarz and Siebenrock: Berl. klin. Wchnschr. **48**: 1220, 1911.

be explained on the same basis as the roentgen-ray cancer, long continued stimulation of the lymphoid cells leading sometimes to the exaggerated autonomous proliferation of malignancy. So, too, sufficiently protracted stimulation of the connective tissues may cause them to acquire the property of malignant growth; but roentgen-ray or radium sarcomas seem to be rare. Presumably, this is because the connective tissues are less sensitive to radiant stimulation than are the lymphoid cells, and less exposed than the surface epithelium. Nevertheless, roentgen-ray sarcomas have been observed, both in experimental animals and in men. Beck [2] has recently reported three cases in which tuberculous lesions in bones healed under the influence of rest and repeated roentgenization, but after some time a sarcoma developed in the area that had been exposed to the rays. These cases would seem to parallel the not infrequent cases of carcinoma arising in the lesions of lupus that have been treated with roentgen rays, and possibly depend on the combined proliferative stimulus of the tuberculosis and the rays. The facts cited above are of clinical importance not only in suggesting a danger to be avoided, but also as furnishing useful evidence on the subject of tumor causation. They illustrate the fundamental law that agencies which, when concentrated, kill cells usually stimulate their growth when in sufficient attenuation, and that any agency whatever that causes cells to proliferate may in course of time induce a malignant type of proliferation in these cells.

THE MARVELS OF ABRAMS AND YERGIN

A few months ago THE JOURNAL published some articles [3] regarding the marvels of Albert Abrams of San Francisco. Dr. Abrams, it will be remembered, has evolved a system of abdominal percussion practiced in connection with his electrical apparatus, the "Oscilloclast," and from which he derives the "Electronic Reactions of Abrams." A piece of paper on which has been placed a drop of blood from an individual Abrams may never have seen, and who may be on the other side of the world, is connected with the "Oscilloclast"; at the same time, a healthy individual (the "subject") is also connected with the "Oscilloclast" and his abdomen is percussed. Dr. Abrams claims to be able, by means of various areas of resonance and dulness he finds in the "subject" when undergoing this test, to determine whether the individual whose drop of blood is being "tested" is suffering from syphilis, carcinoma or tuberculosis and, if so suffering, where the diseased area is located. Nor is this all. So skilful has Dr. Abrams become in the percussion business that he can substitute for the drop of blood, the *autograph* of an individual, living or dead, and subject it to his tests and declare whether or not the individual is or was a sufferer from syphilis, etc. He has, for instance, subjected the autograph of Samuel Pepys to his "electronic reactions" and found that this famous diarist suffered from congenital syphilis; he has found the same for Henry Wadsworth Longfellow and also for Edgar Allan Poe and, for the latter, adds that he also gets the "reaction of dipsomania." The autograph (dated Feb. 7, 1775) of that stern old moralist Dr. Samuel Johnson, gave the "reaction" for acquired syphilis and tuberculosis! In the Propaganda Department of this issue of THE JOURNAL an article appears dealing with an individual, one Yergin, who propounds a theory and a practice that bids fair to rank well with the "electronic reactions of Abrams." Yergin arranges the chemical elements according to their atomic weights and then adapts this arrangement to the keyboard of a piano. Of course there is a chart (copyright) which elaborates this matter in detail. Yergin declares that, when such an arrangement has been made on a piano "perfectly tuned," striking the keys "representing two or more elements" as they are known to be combined in the chemical field will produce the same effect on human beings as "would have been produced had the same compound been given in material chemical form." We commend Yergin's theories to the attention of Mr. Upton Sinclair; they should furnish material for at least one good magazine article. The subject may even seem worthy of study by Sir James Barr. In any event, it is all very interesting hot-weather reading—when one does not want to think.

2. Beck, A.: Zur Frage des Roentgensarkoms, München. med. Wchnschr. **69**: 623 (April 28) 1922.

3. These have been reprinted and will be sent on receipt of a request accompanied by a stamped, addressed envelop.

URINARY INDIGO

Although in recent years there has been little, if any, mention of indigo as a constituent of human urine, it received occasional notice in earlier days, particularly in the period when cholera was more prevalent than today in European countries. Likewise, the older textbooks make mention of urinary concretions exhibiting indigo, whereas such findings appear to be uncommon at present. Studies which Hoppe-Seyler [1] of Kiel conducted during the war furnish an explanation of many of the facts regarding so-called indiguria. According to these investigations, urines which give a strong test for indican (potassium indoxyl sulphate) are readily acted on by bacteria, notably those of the colon type, so as to liberate indoxyl and subsequently form blue indigo in the presence of air. It is not strange, therefore, that germ-laden urines sometimes deposit the blue pigment on standing. In the course of these investigations, Hoppe-Seyler [2] has at length disposed of the contention that the precursor of indigo blue in the well known Jaffé test is some as yet unrecognized substance, by actually isolating the potassium indoxyl sulphate, which Baumann and Brieger claimed as the antecedent of indican in their pioneer studies of many years ago. Since then, indoxyl glycuronate has been added to the list of indigo-yielding occasional components of human urine. Thus the history of urinary indigo has largely been unraveled.

1. Hoppe Seyler, G.: Zur Kenntnis der indigobildenden Substanzen im Urin, 2. Ueber die Zersetzung der Indoxylschwefelsaure im Urin durch Bakterien und die Entstehung der sogenannten Indigurie, Ztschr. f. physiol. Chem. **97**: 250, 1916.

2. Hoppe-Seyler, G.: Zur Kenntnis der indigobildenden Substanzen im Urin, 1. Darstellung von indoxylschwefelsaurem Kalium aus menschlichem Urin, Ztschr. f. physiol. Chem. **97**: 171, 1916.

Association News

THE GORGAS MEMORIAL FUND

At the St. Louis Annual Session the Board of Trustees reported to the House of Delegates that in response to a request received from the directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine for the cooperation of the American Medical Association, the Board had taken action which resulted in the appointment of a committee, representing the American Medical Association, to act on the project. The following were appointed: Dr. Charles W. Richardson, Washington, D. C.; Dr. Fred B. Lund, Boston, and Dr. George E. de Schweinitz, Philadelphia.

The House of Delegates unqualifiedly endorsed the Gorgas Memorial as a tribute to a past President of the Association and one of its most distinguished and loved members. At its recent meeting the Executive Committee of the Board of Trustees received the following statement from the committee and directed its publication.

Statement and Appeal for Cooperation

As a result of the stimulating suggestion of President Porras of Panama, it has been resolved that a fitting memorial shall mark the humanitarian service of the late Major General William C. Gorgas, and the beneficent influence of his life and work on mankind throughout the world. Following the thought of President Porras, it has further been decided that this memorial shall take the form of a scientific institute for the study of tropical diseases and of preventive medicine.

No better place could have been selected than Panama City, the gateway between the Atlantic and the Pacific, where General Gorgas' well-planned and executed work made possible the building of the Panama Canal.

It is hardly necessary to call the attention of the medical profession to the far-reaching effects of General Gorgas' work on the welfare of the people of the whole world, especially in tropical and semitropical climates, and in all places subject to the inroads of infectious disease.

We of the medical profession remember him as our Surgeon General during the early part of the World War. We remember his prompt recognition of the necessity of bringing into active service large numbers of physicians and surgeons from civilian life. We remember his genial and kindly nature, his high character, and his steadfast effort directed toward the organization and equipment of the Medical Corps of the Army. We remember the patriotic response. We remember him as a great sanitary officer, to whom we wish to pay a lasting tribute.

A central committee has been formed, with Admiral Braisted, retired, ex-President of the American Medical Association, as its president. The American Medical Association has appointed a committee of three to work in accord with the central committee, and through its members this appeal is made to the American medical profession.

The plan is to build at Panama an institute for the study of tropical and infectious diseases, with a hospital, laboratories, departments for research and all other facilities required in an institute of this character, erected and administered according to the most progressive, modern ideals. The Panamanian government, owing to the far-sighted, philanthropic vision of President Porras, has donated the great Santo Tomas Hospital, and also the ground on which it is proposed immediately to construct the buildings as they have been described. Dr. Strong has been appointed the scientific director.

In conjunction with this work in Panama, there will be established in Tuscaloosa, Ala., the Gorgas School of Sanitation for the purpose of training country health workers, sanitary engineers and public health nurses, especially educated to deal with the problems peculiar to the Southern states.

An endowment of six and one-half million dollars will be required to enable the institute to carry on the work according to the plans which have been formed.

The Republic of Panama has demonstrated its sympathetic and practical interest in this enterprise with splendid liberality. The physicians of our country, and especially the members of the American Medical Association, surely will not disregard the memory of a former President, and will seize the opportunity to make in this respect a contribution of which they will be proud.

The campaign for funds is to be international. A large response is expected from North, Central and South America, since the nations of these countries have been the chief beneficiaries of the labors of General Gorgas. It is fitting that his co-workers of the American medical profession should be requested to respond generously to this appeal. It is hoped that every member of the American Medical Association will make as liberal a subscription as possible. Any sum will be gratefully received. Checks should be drawn to the order of the "Gorgas Fund" and should be mailed to the American Medical Association, 535 North Dearborn Street, Chicago.

CHARLES W. RICHARDSON, Chairman,
Washington, D. C.,
F. B. LUND, Boston,
G. E. DE SCHWEINITZ, Philadelphia.

THE SCIENTIFIC EXHIBIT MEDALS

Here are reproduced (actual size) the obverse and reverse views of the gold medal, first award of the Scientific Exhibit of the American Medical Association at the St. Louis session. The medal was "awarded to Frank Hinman, D. M. Morison, A. Elmer Belt, R. K. Lee-Brown for a study on renal circulation."

The silver medal is struck from the same die as the gold medal. The silver medal was "awarded to Robert Shattuck Hodges, University of Alabama, for a study of certain culture medium characteristics of ringworm fungi."

COMMITTEE ON TOXIC EFFECTS OF LOCAL ANESTHETICS

A Committee for the Study of Toxic Effects of Local Anesthetics has been appointed to act under the Therapeutic Research Committee of the Council on Pharmacy and Chemistry. The personnel of the committee is as follows, the several members representing the sections of the Scientific Assembly as indicated: Emil Mayer, chairman, New York (Laryngology); Elliott C. Cutler, Boston (Surgery); Henry S. Dunning, New York (Stomatology); Robert S. Lamb, Washington, D. C. (Ophthalmology); David I. Macht, Baltimore (Medicine); Charles Norris, New York (Pathology); Alexander Randall, Philadelphia (Urology), and Robert A. Hatcher, secretary, New York (Pharmacology).

The purpose of the investigation which it is proposed shall be conducted is to assist in increasing the safety, value and importance of local anesthesia. All information received by the committee will be considered strictly confidential. The committee will appreciate the cooperation of physicians. This cooperation can most practically be given by furnishing the following information to the chairman or to one of the committee:

1. Have you, during 1920 or 1921, observed any toxic effects—fatal or not—following the use of cocain or any of the other local anesthetics?

2. If you have observed such toxic effects please submit a detailed report of each case; record, among other facts, data concerning the

patient's general condition, the occasion for using the local anesthetic, the drug employed, the method of administration and the dose administered.

3. Kindly inform the committee of the name and address of any physician whom you know to have had any accident with any one of the local anesthetics.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Appointment of Medical Examiners.—Governor Bone appointed eight physicians as members of the Alaska Territorial Board of Medical Examiners, July 1, giving each division two memberships. The appointees are, first division, Dr. Harry C. DeVighne, Juneau, and Dr. Fred L. Goddard, Sitka; second division, Dr. Curtis W. Welch, Nome, and Dr. William Ramsey, Council; third division, Dr. Floyd B. Gillespie, Kennecott, and Dr. John B. Beeson, Anchorage, and fourth division, Dr. Frank R. De LaVergne, Fairbanks, and Dr. Joseph H. Romig, Nenana. These appointments are for four-year terms, and are all reappointments with the exception of Dr. Beeson.

CALIFORNIA

Personal.—Dr. Wendell A. Jones, Arlington, has been appointed director of the Riverside County Hospital to succeed Dr. Edward H. Wood, who resigned on account of ill health.——Dr. Clarence D. Dickey, San Bernardino, was appointed county physician, and local health officer for the sixth, eighth and tenth judicial townships, August 7.

Health Center.—Whittier is to be made the health center for the part of Los Angeles County served by the physicians of that city. A plan in contemplation involves a contract between the city of Whittier and the board of supervisors of Los Angeles County for the performance of the functions relating to the work of the health officers of Whittier. The county will furnish a full-time health officer, and Whittier will pay the sum of $2,000 a year to Los Angeles County for his services.

Physiotherapy Course.—A course of study for the training of technicians in physiotherapy has recently been instituted at Stanford University Hospital, San Francisco. This course is designed to give adequate theoretical and practical knowledge to those persons who want to have efficient training in this branch of medical treatment to be administered under the supervision of the medical profession. The course was instituted to meet the demand for wider knowledge of physiotherapy in its application to rehabilitation and industrial accident work.

Revocation of Licenses Reconsidered.—At the meeting of the state board of medical examiners, June 28-29, various cases of revocation and suspension of licenses were reconsidered. In the case of Dr. Jacob L. Arbogast, Sacramento, whose license was revoked at the February meeting on account of conviction of violation of the Harrison Narcotic Law, probation of one year was granted.——The case of Dr. Charles E. Brown, Fresno, whose license was suspended on conviction of violation of the Harrison Narcotic Law, as of February, on rehearing was dismissed.

Hospital News.—A site has been purchased for a hospital at San Pedro. More than $50,000 has been subscribed to the Harbor Hospital Association of San Pedro for this purpose. ——A psychopathic ward will be added to the Orange County Hospital, Orange, at a cost of $28,000. A court room will be provided in connection with the addition.——The cornerstone of the new fifty bed addition to the Paradise Valley Sanatorium at National City was laid, July 2.——Dr. Paul M. Carrington has taken over the management of the Alpine Sanatorium at Alpine, San Diego County, and will continue it as an open staff hospital.——The Celite Hospital, Lompoc, was completely destroyed by fire recently. No lives were lost. It will be reconstructed in the near future.——A new $500,000 plant will be erected at Glendale for the Glendale Sanatorium. The first unit of the "health plant" will contain 150 private rooms for patients, and accommodations will be provided for a training class of fifty or sixty nurses.——The People's Hospital Committee will erect a community hospital at Long Beach.——An addition will be made to the Seaside Hospital, Long Beach, at a cost of $135,000.

GEORGIA

Wesley Memorial Hospital.—The new Wesley Memorial Hospital, erected on the campus of Emory University School of Medicine, Atlanta, will be opened in September. The first unit represents an outlay of $1,250,000, while the total cost of the institution, when finished, will be more than $3,000,000. Connected with the new hospital will be the Lucy Elizabeth Candler Memorial, which will be the maternity pavilion, erected with funds donated by the children of the late Mrs. Asa G. Candler. The bed capacity of the first unit will be 235, with a total capacity, when completed, of 500. This institution will ultimately become the teaching instrument of the medical school. The staff will be elected in September.

INDIANA

Physician's License Revoked.—A report from the Indiana State Board of Medical Registration and Examination states that at a meeting, July 12, the license of Dr. William A. Wenz to practice medicine in Indiana was revoked on the ground that he was guilty of obtaining money by misrepresentation and fraud. Dr. Wenz was formerly of Champaign, Ill., but later became a resident of Indiana. The indictment on which he was tried was based on an action which occurred at Hammond.

IOWA

New Quarantine Rules.—At a meeting of the state board of health in Iowa City, August 5, new rules were formulated in regard to the quarantine of contagious diseases. It was decided to adopt a placard covering the detection, care and exclusion from schools of various contagious diseases. A copy of the placard will be furnished for every school in the state. The board inspected the medical laboratory at the State University of Iowa College of Medicine, and found that in the making of one test alone they had saved the state in the last year more than four times the cost of the health board to the state. Wassermann blood tests made in the commercial laboratories cost $5. During July the university laboratory made 2,477 tests free of charge, saving the citizens of the state $12,385.

KANSAS

Hospital News.—A new infirmary building will be erected at the Kansas Masonic Home, Wichita, at a cost of $20,000. ——The Julius Rotter Hospital, Parsons, will in future be known as the Parsons Clinical Hospital.

LOUISIANA

Permit Refused Tuberculosis Hospital.—Permission to construct a free clinic and hospital on the Gentilly Road, near Bayou St. John, was refused the Louisiana Antituberculosis League by the city commission of New Orleans, August 8. The society has been trying for months to obtain a permit for the hospital, but each time a site was selected the protest against the hospital was renewed.

Training School for Girls.—A school for girls who have presented unusual problems at home or in the ordinary graded schools was opened recently at New Orleans. Examinations are made at the school by the examining staff, which consists of Dr. Charles L. Eshleman, internist; Drs. Henry Daspit and Walter J. Otis, neuropsychiatrists, and Prof. J. M. Fletcher, psychologist.

MAINE

Personal.—Stanley D. Wilson, Ph.D., Belfast, has been appointed dean of the Premedical School in connection with the Union Medical College, Peking, China, and has also been appointed honorary professor of the chemistry department of Peking University, having been head of the chemistry department for the last five years.——Dr. William G. Chamberlain, Fort Fairfield, was recently elected president of the Aroostook County Medical Society.

MARYLAND

Dohme Memorial Lectures.—Prof. H. J. Hamburger, professor of physiology, histology and physiologic chemistry at the University of Gronigen, Holland, will deliver the Charles E. Dohme Memorial Lectures at Johns Hopkins Medical School, October 10-12. This lectureship was recently estab-

lished by Mrs. Dohme as a memorial to her husband, who was a manufacturer of pharmaceutical products. It is the purpose of the donor to have presented in these lectures discoveries which intimately concern chemistry, pharmacy and medicine. Professor Hamburger has chosen as the subject of his lecture "The Increasing Significance of Permeability Problems for the Biological and Medical Sciences."

MASSACHUSETTS

Tufts Elects a Dean.—Dr. Stephen Rushmore, associate professor of gynecology, Tufts Medical School, has been elected dean of the medical school to succeed Dr. Charles F. Painter, who resigned a year ago.

Personal.—Dr. Edward P. Richardson has been appointed chief of the full-time surgical service, which the trustees of the Massachusetts General Hospital have authorized to commence, September 1.——Dr. Clarence J. Gamble, Boston, was recently seriously injured in an aeroplane accident at Framingham. He is at the Framingham Hospital suffering from a broken nose, a fractured leg, a crushed shoulder and concussion of the brain.

Hospital Construction.—The new Swedish Hospital at Fairlawn will be completed about December 1. It will have 70 beds; a large residence on the hospital grounds will be remodeled and used as a nurses' home.——A campaign will be conducted to raise $150,000 to build a permanent wing to the Cape Cod Hospital, Hyannis. To meet present needs, a temporary portable building has been erected on the grounds. ——The contract has been let for the construction of the main hospital and administration building, the first two units of the Lawrence Memorial Hospital, Medford. This hospital will be erected and endowed from a fund of about $800,000 left by the Hon. Daniel W. Lawrence and his son, Roswell B. Lawrence. It will be located on land donated by Mrs. Carolyn Lawrence.

MICHIGAN

Personal.—Dr. Bert U. Eastabrook, Detroit, has been appointed deputy commissioner of the state department of health to succeed W. F. Walker, who has been permanently assigned in charge of the Detroit Tuberculosis Sanatorium at Northville.——Dr. Milton B. Kay, Detroit, and Dr. Adolph Schoenfield, Detroit, were elected recently president and secretary, respectively, of the Maimonides Medical Society.

Hospital News.—A new fifty-four bed building will be erected for the County Tuberculous Hospital at Marshall, at a cost of $111,000. This building will be part of a group to be erected in the near future.——The contracts have been awarded for the construction of the Jennings Hospital in Detroit. Drs. Charles G. and Alpheus F. Jennings are founding the institution.——Plans are being revised for the new city hospital and nurses' home at Flint. Bids on the contract will be awarded this month. The new building will be a sixteen-story structure and will have accommodations for 300 patients. The estimated cost is $1,500,000.——The first hospital to be located in Monroe was opened August 14.

MINNESOTA

Visiting Nurses Will Charge More.—The Visiting Nurses' Association of Minneapolis has advanced its charge for each visit for one hour or fraction thereof from 75 cents to $1, it has been announced.

Hospital News.—The contract has been let for the construction of the new cottage for women at the State Hospital for the Insane at St. Peters. The new structure will be erected at a cost of $57,345.——The site has been selected for the new city hospital for Eveleth, which will be erected in the near future.

MISSISSIPPI

Change Name of Hospital.—The Matty Hersee Hospital, now in course of construction at Meridian, will be known on completion as the East Mississippi Charity Hospital, it has been announced. The plans call for a tile and brick building with accommodations for 200 patients.

Personal.—Dr. Henry L. Cook, Jackson, has been appointed full-time health officer of Hinds County.——Dr. Hubert H. Ramsay, Tylertown, has resigned as public health unit leader of Forrest County, and has accepted the appointment to take charge of the Mississippi Home for the Feebleminded at Ellisville.

Survey of Blind in the State.—The Mississippi Association for the Blind, permanent organization of which was effected, August 4, at Jackson, plans to make a survey to determine the number of blind persons in the state and the cause of blindness in each case. A social worker will be provided to make interviews and ascertain individual needs of the blind. The organization hopes to wage an educational war for the prevention of blindness and the conservation of vision, to assist the state board of health in stamping out diseases that cause blindness, and to help enforce the laws on the care of babies' eyes.

MONTANA

State Epidemiologist Appointed.—Dr. Francis A. Coward, Columbia, S. C., has been appointed state epidemiologist and director of the laboratory of the state board of health of Montana, to succeed Dr. E. D. Hitchcock, who resigned recently.

Laboratory Assistant Dies from Spotted Fever.—William Gettinger, U. S. Public Health Service, died at Hamilton, June 30, of Rocky Mountain spotted fever, contracted while engaged in laboratory work in connection with the investigation of the disease.

NEBRASKA

Hospital News.—The name of the Ford Hospital, Omaha, was changed recently by action of its board of trustees to the Paxton Memorial Hospital.——Plans have been prepared for an addition to St. Mary's Hospital, Columbus.——A $75,000 hospital building will be erected at Beatrice by the state.

NEW JERSEY

Inoculation as a Substitute for Dog Muzzling.—A dog inoculated against rabies within one year, if duly tagged to show that fact, is permitted to be unmuzzled on the streets of Englewood, under an ordinance recently enacted by the common council of Englewood.

Personal.—Dr. Fred A. Pringle, on the staff of the Essex County Hospital at Overbrook, Cedar Grove, has been appointed superintendent of the Essex County Hospital for Contagious Diseases at Belleville.——Dr. Jacob Roemer, Paterson, recently returned from abroad where he has spent nine months in Berlin, Vienna and Frankfort.

NEW YORK

Medical College Will Be Enlarged.—Although no definite plans have been drawn, it is reported that new buildings will be erected at Syracuse University College of Medicine to enlarge that institution. Proximity of the medical college to the Syracuse Free Dispensary is a factor which will tend to keep the college in its present location, although placing the college of medicine on the university campus proper has been discussed, and is favored by many.

Hospital News.—The Vassar Brothers Hospital, Poughkeepsie, will be enlarged from 117 beds to 225 in the near future, it is announced.——After ten years' litigation over the will of Mrs. Julia Butterfield, work on the hospital bequeathed by her to the village of Cold Springs was started, July 22. ——A petition of the Jewish Aid Construction Society to build a tuberculosis sanatorium near White Pond was withdrawn at a hearing, before the state health department, July 20. Health officers testified that the proposed sanatorium would threaten contamination to the New York City water supply as White Pond is a part of the Croton watershed.——Fire recently destroyed the eastern end of the administration building of the Loomis Sanatorium, Loomis. The estimated loss is $50,000.

New York City

Causes of Death.—Among the 129,575 deaths in New York in 1921, only 707 were listed due to old age. It is reported that 104,600 persons who died lived to be 5 years or more of age, and that 65,000 died before they were 65 years of age.

Winter Coal for Hospitals.—The department of health has ordered all hospitals to report immediately their fuel requirements for the winter. The acting commissioner stated that fuel for the sick would be distributed from the first coal received in the city after mining operations are resumed.

Study Milk Pasteurization.—Under the direction of Dr. Charles E. North, director of the public health bureau, New York, a group of scientists started experiments, August 9, at the Borden Farm Products Company at Endicott, to determine the most satisfactory methods for the pasteurization of

milk. The work is a series of laboratory tests, and required 14,000 quarts of milk and millions of typhoid and tuberculosis germs. The experiments will cover the effect of pasteurization at various temperatures on the bacteria of typhoid, tuberculosis and bovine tuberculosis, with the aim of adopting a uniform temperature for pasteurization.

Campaign to Reduce Infant Death Rate.—The division of maternity, infancy and child hygiene, recently organized by the state department of health, issued a call, August 17, to the women's organizations of the state to help in the new campaign to reduce the infant death rate. The department suggested that cooperation follow, in general, along three lines: (1) the formation of mothers' health clubs; (2) the provision of mother's helpers, who will go into homes and help with household duties at the time of confinement, and (3) the formation of mother and child hygiene study classes, to inform members of existing conditions in the community and to promote improvements.

NORTH CAROLINA

To Enlarge Barker Memorial.—Construction work is expected to start early this fall on the new home for the Clarence Barker Memorial Hospital and Dispensary at Biltmore. The orthopedic hospital, which was planned for a separate institute, will be a wing of this hospital, according to a recent decision. The first group of new buildings will be erected at a cost of $350,000.

Personal.—Dr. John C. Dye, formerly of Stateville, has sailed for Honolulu, where he will have charge of the eye department of the Tripler General Hospital.——Hunter McGuire Sweaney, Durham, has been appointed city and county physician.——Dr. Alexander Chester Bulla, Winston-Salem, in the midst of an inoculation campaign against typhoid fever, conducted by the state board of health, himself contracted the fever.

OHIO

Hospital News.—The Henry L. Wells Hospital, Cambridge, was dedicated and formally opened, June 29, with appropriate exercises.——A three-story addition will be erected at the Flower Hospital, Toledo.——A $100,000 building will be erected at the Community Hospital at Berea.

Name Revised at University.—By the action of the board of directors of the University of Cincinnati, the Christian R. Holmes chair of clinical medicine was recently changed to the Christian R. Holmes chair of surgery. This action was concurred in by the Carnegie Foundation, which had assigned $250,000 to establish a chair of clinical medicine in honor of Dr. Holmes.

Personal.—Dr. Guy T. Wasson, Jefferson, Ashtabula County Health Commissioner, assumed the office of commissioner of the Bucyrus district August 1, succeeding Dr. James J. Martin, resigned.——Dr. Howard D. McIntyre, instructor in physiology, University of Cincinnati Medical College, and clinical instructor in nervous and mental diseases at the General Hospital, recently resigned both these positions to become director of psychiatric research at White Oaks Farm, Marion. His wife, Dr. Aurelia P. McIntyre, has become director of the clinical laboratory at the Marion institution.——Dr. J. Morton Howell, formerly of Dayton, diplomatic agent and consul general at Cairo, Egypt, has been promoted to the post of envoy extraordinary and minister plenipotentiary to Egypt. This change occurred when Egypt became a free state.——Dr. Howard M. Brundage, Columbus, who has been ill since last November, has now returned to the medical staff of the Mount Carmel Hospital.——Dr. R. C. Dysart, Columbus, has recently returned from two and a half years' service with the American Red Cross as chief of medical supplies in the Baltic states. He has been appointed assistant in the division of communicable diseases of the state department of health.——Dr. Emery R. Hayhurst, Columbus, sustained serious injury to his right knee in an automobile accident, August 2.——Dr. Edward J. Schwartz, Columbus, has been appointed chief of the division of vital statistics to succeed Dr. Ulysses G. Murrell, Wilmington, who resigned recently.

PENNSYLVANIA

Children to Be Revaccinated.—Dr. Charles H. Witmer, county medical inspector at Lancaster, stated recently that there are hundreds of children in that city and county who have presented to the school authorities certificates stating that vaccination had been performed but on examination it is found these children have never been vaccinated successfully. Four county physicians have been appointed, and all children who have undergone unsuccessful attempts at vaccination are to be revaccinated.

Personal.—Dr. Eugene J. Hamborsky, Farrell, has been appointed examining surgeon for the Bureau of Pensions of the Department of the Interior at Washington, D. C., from Mercer County.——Dr. Leroy E. Chapman, coroner of Warren, has been appointed trustee at Warren State Hospital.——Dr. Edmund C. Bobby, chief of staff of the War Veterans' Hospital, Mont Alto, gave a demonstration of pneumothorax at a meeting of the Franklin County Medical Society, held at that hospital, July 15.——Dr. Richard D. Jameson, Lock Haven, has been appointed full-time health officer for Clinton County.——Dr. Harvey A. Price, Port Carbon, was seriously injured, July 10, when the steering gear of the automobile in which he was riding broke, and the machine plunged into the Schuylkill River.——Dr. George A. Parker arrived in Reading, August 4, to assume his duties as superintendent of the Reading Hospital. Dr. Parker was formerly superintendent at the Butterworth Hospital, Grand Rapids, Mich.

Philadelphia

Philadelphia Pediatric Society.—This society will celebrate its twenty-fifth anniversary, October 10, with a dinner and meeting. In honor of the occasion a special committee has been appointed on increase in membership, with the hope of bringing the membership to the five hundred mark.

Hospital News.—The contract has been let for the erection of a sixteen-story addition to Jefferson Hospital. It will be built on the site of the former nurses' home, Sansom and Clifton Streets. This addition is to be a memorial to the late Justice Samuel Gustine Thompson and will be erected at an estimated cost of $1,400,000.——The West Philadelphia Hospital for Women has purchased additional property for an annex.

Personal.—Dr. M. Luise Diez, Philadelphia, has been appointed obstetrician in the division of maternity, infancy and child hygiene of the New York State Department of Health.——Dr. Arthur C. Morgan has been appointed professor of applied therapeutics in the Temple University Medical Department, Philadelphia, to succeed Dr. Charles E. deM. Sajous, who resigned on account of the age limit, recently.——Dr. Carl F. Schmidt, Philadelphia, who has been engaged by the Rockefeller Foundation to do chemical research work in China, arrived in Peking, July 30.

Physical Development of Schoolchildren.—The instructor of medical inspection of public schools of Philadelphia recently announced that the division is now assisting in the revision of the school instruction courses in physiology and hygiene; about 1,000 undernourished children and their parents are being regularly instructed in proper health habits by the school physicians and nurses; stoop-shouldered children are being informed as to the causes of their condition by the school physicians, and are given proper corrective exercises by the instructor of the division of physical education, and about 80,000 children have been enrolled in the modern health crusade under the auspices of the Philadelphia Health Council and the tuberculosis committee. During the school year ending June, 1921, 222,605 annual physical examinations of pupils were made. Medical inspectors and nurses gave 400 talks in the schools at the annual celebration of Health Day.

RHODE ISLAND

Rhode Island Medico-Legal Society.—At the annual meeting of the society, June 29, held under the presidency of Dr. Roswell S. Wilcox, the following officers were elected for the ensuing year: president, James P. Littlefield; vice president, Dr. Harry S. Flynn, Providence, and secretary-treasurer, Dr. Jacob S. Kelley, Providence.

SOUTH CAROLINA

Board of Health Organized.—At a meeting called by the mayor, August 1, the Landrum Board of Health was organized. Dr. A. R. Walden was elected president of the board.

Hospital News.—A new $60,000 hospital will be erected at Charleston by the Greater Citadel Hospital.——A tuberculosis clinic has been established at the City Hospital, Greenville, under the auspices of that institution and the Greenville County Tuberculosis Association. An appropriation of $6,000 additional to the charity fund of the hospital was also voted, July 17. This brings the total sum for charity work to $12,000.——The new home for nurses at Columbia Hospital,

to be known as William Weston Hall, was formally opened by the mayor, July 28. The structure is named for Dr. William Weston and was erected at a cost of $100,000.——The contract has been let for an addition to the South Carolina Sanatorium, Columbia, to be completed, September 1.——The Julia Irby Hospital, Laurens, has been leased by Drs. Hugh R. Black and Samuel O. Black of Spartanburg, and will be reopened September 1.

SOUTH DAKOTA

To Enlarge State Sanatorium.—The South Dakota State Sanatorium for Tuberculosis, Custer, will be enlarged by the addition of two new pavilions, soon to be erected.——A new thirty bed hospital will be erected at Vermillion and it is expected to be ready for occupancy about September 15. Dr. Eugene M. Stansbury of Vermillion will be director of the institution.

WASHINGTON

Nurses' Club for Seattle.—At the annual convention of nurses held recently in Seattle, it was announced that a club house for nurses would be erected in Seattle at a cost of $400,000. The building will be seven stories high with 200 rooms, and will provide central headquarters for all nursing organizations.

Personal.—Dr. Frank M. Crosby, Kennewick, has resigned as health officer of East Benton County, and will be succeeded by C. F. McCluskey of Kennewick.——Dr. Walter Cowan has been appointed city and county health officer of Walla Walla to succeed Dr. E. A. Montague, who resigned recently to take up work at the U. S. Public Health Service Hospital at Fort Walla Walla.

Hospital News.—The new $150,000 building at St. Anthony's Hospital, Wenatchee, is completed and will soon be opened to patients.——Construction work on the U. S. Veterans' Hospital to be erected at Camp Lewis, Tacoma, at a cost of $3,000,000 was started in August.——The Valley Hospital, Puyallup, was opened for patients, August 15.——A new hospital will be erected at Everett at a cost of approximately $350,000.

CANADA

Society News.—The Winnipeg Medical Society offers a prize of $200 for the best essay on any subject related to the science or art of medicine. The essay must be in the hands of the secretary not later than December 31, and the society reserves the right to withhold the prize unless, in the opinion of the judges, the essays are of sufficient merit.

Canadian Radiological Society.—At the third annual convention of the society held recently in Winnipeg, the following officers were elected for the ensuing year: president, Dr. Lewis J. Carter, Brandon, Manit.; vice presidents, Drs. Charles W. Prowd, Vancouver, J. C. McMillan, Winnipeg, and Leo E. Pariseau, Montreal; secretary-treasurer, Dr. Louis K. Poyntz, Victoria. The rules and regulations governing the Canadian Registrar of Technicians established in 1921 were adopted, and Dr. Poyntz was appointed registrar and examiner.

Personal.—Dr. William Magner of Cork, Ireland, has been appointed pathologist to St. Michael's Hospital, Toronto.——Sir Edward Worthington, M.D., R. A. M. C., has been appointed Companion of the Order of the Indian Empire for services rendered with the Duke of Connaught in India.——Dr. John Fenton Argue, Ottawa, was recently elected president of the Ontario Medical Council.——Dr. Frank H. Pratten, medical superintendent of the Queen Alexandra Sanatorium, Byron, Ont., has been appointed an instructor in medicine at Western University Faculty of Medicine, London, Ont.——Brig.-Gen. F. E. Burnham, M.D., of the Canadian White Cross, has been awarded the Medaglia Commemorativa, by the state of Fiume, in recognition of his services.——Dr. George W. Graham, Toronto, has been appointed chief coroner for Ontario. Dr. Graham has been acting chief for more than a year.——Dr. Madge T. Macklin, A.B., has been appointed instructress in histology and embryology in the medical college of Western University, London. Dr. Macklin, it is asserted, is the first woman appointed to the staff of the university.

Hospital News.—A new $100,000 municipal hospital is being planned for Walkerville, Ont., following a recent vote of the city council.——Plans have been prepared for a new municipal hospital for Hardisty, Alberta, which will be erected at an estimated cost of $30,000.——The provincial government of Alberta will add to the Strathcona Hospital in Edmonton an eighty to 100 bed wing, for the use of ambulant soldier patients. The cost of this new construction will be $100,000.——Work has been started on the new wing of the St. Sauveur Orphanage at Quebec. It will be a seven-story structure, providing space for a dispensary, offices and bed rooms, and will be erected at a cost of $86,000.——The Grey Nuns Hospital at Regina, Sask., will erect a ninety-bed addition at a cost of $150,000. The new structure will contain thirty private wards and an isolation section of twenty-five beds.——The Victoria County Council, Nova Scotia, has accepted the offer of Charles T. Carruth of his summer residence, grounds and farm at Baddeck, valued at $25,000, to be used as a public hospital.——The province of Quebec will make a grant of $150,000 to the Mount La Salle Tuberculosis Hospital at Montreal, in addition to the grant of $100,000 already made. The hospital will be operated by the Sisters of Providence under a contract with the city of Montreal which requires that 200 free beds shall be maintained for patients, the city to pay $73,000 yearly, and the 250 remaining beds to be available to the public on payment of half the cost.——The minister of Soldiers' Civil Reestablishment will make a tour of inspection of all the hospitals, sanatoriums, and other institutions under the judisdiction of his department. He will visit the eighteen hospitals operated directly by the department, and also a number of others containing "government patients." It is also stated that the government has decided to appoint a royal commission to investigate charges made by the War Veterans' Association, as to mismanagement of pensions and insurance granted to returned soldiers.——A new wing will be erected at the General Hospital, Oshawa, and will be known as the Robert McLaughlin Memorial Wing. The new wing will contain twenty-five rooms, and will be set apart as a maternity department. It is expected that the building will be completed about October 1.——At a special meeting of the city council of Kingston, Ont., the additional sum of $25,000 was voted for the construction of a contagious disease building in connection with the General Hospital. The new structure will be erected at a cost of $200,000.

GENERAL

No Duty on Scientific Apparatus for Education.—The tariff bill as finally passed by the Senate provides that philosophical, scientific and library instruments and apparatus which are imported by educational institutions and used solely for educational purposes shall be admitted free of tariff duty. It was pointed out by Senator Sterling that this privilege had been accorded educational institutions in all previous tariff bills. The duty free provision was adopted by a vote of 30 to 26.

Government Investigation of Causes of Cancer.—It was announced by the Treasury office, August 10, that Dr. Joseph W. Scherechewsky, assistant surgeon-general, U. S. Public Health Service, Washington, D. C., has been commissioned to conduct an investigation into the cause of cancer. Headquarters for the investigation will be established in Boston, where it is planned to invite the cooperation of leading medical men and utilize the facilities there for collecting data.

Eye Sight Conservation.—The Eye Sight Conservation Council of America, New York City, is establishing a special mailing list for lecturers and writers interested in the subject of conservation of vision. Data and material will be prepared and issued periodically to persons whose names are on the special mailing list. There is need for lecturers who will appear before local organizations, such as Rotarian and Kiwanis Clubs, chambers of commerce, school and colleges, to present the subject of conservation of vision.

Pharmaceutical Association Takes Action on Alcohol Question.—According to the *Oil, Paint and Drug Reporter*, the American Pharmaceutical Association, meeting last week in Cleveland, "again went on record advocating the establishment of government dispensaries for the distribution of alcoholic beverages; advocated more uniform state narcotic laws and opposed a proposed provision providing for the use of premedicated alcohol for use in maufacturing medicinal preparations."

Hospital Beds for Lepers.—The House of Representatives has referred the bill appropriating $650,000 to be used in the erection of additional buildings at the National Leper Home at Carville, Iowa, to the Committee on Public Buildings and Grounds. The measure recently passed the Senate without a dissenting vote. It provides that the number of beds shall be increased to accommodate 500 lepers, with the understanding that the appropriation shall be increased at the next ses-

sion of Congress, so that ultimately the Carville leprosarium will be sufficiently large to care for every leper in the United States. The home is now under the control of the U. S. Public Health Service.

Mental Hygiene Session of Educational Association.—At the annual meeting of the National Education Association at Boston, July 6-8, the afternoon of July 6 was devoted to mental hygiene. William H. Burnham, Ph.D., professor of pedagogy and school hygiene, Clark University, read a paper on "Mental Hygiene for the School Beginner;" Dr. Walter E. Fernald, superintendent of the Massachusetts School for the Feebleminded, spoke on "The Inauguration of a State-Wide School Clinic in Massachusetts"; Dr. Walter Timme, New York City, gave an address on "Some Internal Glandular Influences on Child Mentality," and the director of the bureau of education, Harrisburg, Pa., spoke on "Fatigue as a Factor in Education."

Association for the Study of Diseases of the Circulation.—At a meeting of a group of physicians interested in the study of diseases of the heart and circulatory system, held in St. Louis, May 23, this new national organization was formed for the purpose of providing a suitable forum for the discussion of matters pertaining to the study of diseases of the circulation. The officers for the year are: president, Dr. Stewart R. Roberts, Atlanta, Ga.; vice president, Dr. S. Calvin Smith, Philadelphia; secretary, Dr. Cary Eggleston, New York; treasurer, Dr. Walter W. Hamburger, Chicago. Dr. Joseph Sailer, Philadelphia, is chairman of the committee on organization. The association will meet on the Tuesday immediately preceding the annual scientific session of the American Medical Association. The next meeting will take place in San Francisco, June 26, 1923. The office of the association is at 34 East Seventy-Fifth Street, New York City.

Revocation of Permits.—The Treasury Department has ruled that "Permits may be revoked by the Federal Prohibition Commissioner or by any assistant or agent designed by him for that purpose. Prior to any such revocation, however, the permittees shall be given a hearing, upon citation issued by any of the persons authorized to revoke and served personally or by registered mail as provided in the act. During the pendency of such revocation proceedings the privileges under all permits issued to such permittee shall be temporarily suspended, unless the Federal Prohibition Commissioner shall otherwise order. Any such revocation proceedings may be reviewed by the Federal Prohibition Commissioner or the Commissioner of Internal Revenue, and the action taken therein affirmed, modified or reversed as the facts and law may warrant. The permittee may by appropriate proceedings in a court of equity have the final action in a revocation proceedings reviewed as provided in Sections 5 and 9 of the Act."

Senate Adopts Prohibitive Duty on Dyes and Drugs.—In the final passage of the tariff bill, the Senate reversed its position on the importation of dyes and synthetic medicines, and placed extremely high duties on all such articles. This action of the Senate is in accord with the position taken by THE JOURNAL in its editorial announcement of August 12, in behalf of American-made synthetic chemicals for medical purposes. There was read to the Senate a letter from Secretary of War John W. Weeks urging that the American dye industry and synthetic medicine industry be protected in the interest of national defense and public health. While the Senate did not vote that there should be an embargo on these products, the tariff duties are of such nature that they will in effect be a conservative check on the importation of dyes and synthetic medicines derived therefrom. The new duties are based on American instead of foreign valuation. They fix the duty on coal-tar dye intermediates at 10.5 cents a pound and an additional 75 per cent. ad valorem, and on finished dyes and coal-tar products, 90 per cent. ad valorem. In urging the adoption by the Senate of these rates, Senator Wadsworth of New York showed that England, France and Italy have placed an embargo against the importation of dyestuffs. He said that as a people we have paid little attention and given small encouragement to scientific research. He asserted that chemical laboratories cannot be maintained unless there is a chemical industry, and that research in the laboratory and chemical industry go hand in hand. As a result of the favorable action taken by the Senate on this legislation, it is said that approximately 200 laboratories and plants manufacturing medicinals and coal-tar products which have been built up in this country since the war will be enabled to continue operations which otherwise must have gone out of existence.

LATIN AMERICA

Personal.—The *Anales de la Sociedad del Guayas* mentions the return to Guayaquil of Dr. Francisco Rojas, after a special course in bacteriology in the United States.

Election of Officers.—The Sociedad Médico-Quirúrgica of Guayaquil held its election June 28. Dr. J. F. Heinert was elected president; Dr. J. V. Payeze G., vice president; Dr. G. Burbano and G. A. Fassio, secretaries; Dr. T. Maldonado Carbo, treasurer, and Dr. P. Egüez Baquerizo, librarian.

Preparations for the Mexican National Congress.—The committee in charge of the organization of the Seventh National Medical Congress of Mexico is issuing a series of bulletins as propaganda and aid. The fourth number just received is handsomely illustrated, with views of the city where the meeting is to be held, medals to be awarded, etc. The city is Saltillo, the date Sept. 3 to 10, 1922. Besides the various official notices and appeals, this *Bulletin* contains a ten page article of instructions for those writing medical articles for the congress or for publication. The selection of the theme, the title, the general plan, the conditions indispensable for a medical work, etc., and finally, the signs used in correcting proof are discussed in detail. The bibliography consists merely of five references, one to a similar article in the *Gaceta Médica de Mexico*, in 1921; one to an article by Uribe y Troncoso in the *Revista Cubana de Otalmología*, and one by Ramón y Cajal, but the first on the list is the "Suggestions to Medical Authors," published by the American Medical Association. Dr. D. M. Vélez is the editor of the *Bulletin* and president of the congress.

FOREIGN

Biology Centennial.—Prof. M. J. Sirks in an article in a Rotterdam daily recently emphasized the importance to biology of the year 1822, as in that year Galton, Mendel and Pasteur were born. All three were pioneers in an unbroken field from which rich harvests have been reaped since.

Prohibition for Minors in Austria.—According to the new law in Austria, after August 1 every person giving or selling liquor to a minor, under 16, is liable to a penalty of not less than 1,000 or more than 100,000 crowns or two weeks imprisonment. The *Wiener klinische Wochenschrift* adds that no penalty is to be enforced if the minor is merely getting the liquor for an adult.

Memorials to Physicians.—A memorial to Dr. A. Charpy, professor of anatomy at the University of Toulouse, was recently erected by the faculty of medicine.——One of the pioneers in the treatment of tuberculosis in Italy, Prof. A. M. Manucci, is to have a marble memorial in the main public square of his native town, Calitri. Prof. A. Ferrannini collected the funds for the purpose.

Typhus Fever on Scottish Island.—An outbreak of typhus recently occurred on the Island of Raasay, and the theory has been advanced that the infection was traceable to the German prisoners who, during the war, were employed in the iron mines there. Several men from another island were recently given holdings on Raasay, and occupied the houses in which the Germans had previously lived. It is among these people that the disease has broken out. Physicians from Edinburgh and nurses have arrived on the island, and the patients are under treatment in a field hospital.

Practice of Medicine in the New Danish Provinces.—The return to Denmark of northern Schleswig has brought considerable confusion into the practice of medicine there, the Danish government not accepting German credentials and not allowing physicians from Germany to practice there unless they had been settled in the country before Jan. 1, 1918. The medical faculty at Copenhagen voted against accepting German degrees, saying that the medical course in Germany is not so thorough as in Denmark, being shorter. This shuts out all the young physicians who took part in the war and were unable to graduate until after 1918.

Election of Officers.—The president and vice president of the Association médicale des hôpitaux de Paris were until recently Professors Bèclère and Broca, but they insisted on resigning their posts when retiring from their official duties elsewhere on reaching the age limit. They were elected honorary presidents, and the duties of acting president were conferred on Dr. Michon. Dr. Sergent was elected vice president and Dr. Ribadeau-Dumas, secretary general, with Dr. Courcoux, assistant secretary.

International Artificial Pneumothorax Association.—The *Schweizerische medizinische Wochenschrift* publishes an

appeal from the general secretary of this association that physicians who make a practice of artificial pneumothorax will send him their names and addresses so that the published list will be as complete and perfect as possible. The annual dues are 5 francs, to be sent to Dr. U. Carpi, the secretary general, Lugano, Switzerland. He attends to international exchanges of reprints, etc., and supplies information on demand. The organ of the association, *Pneumothorax thérapeutique*, has not been revived since the war, on account of financial reasons, but arrangements are being made with the more important special journals in different countries to devote a special number to artificial pneumothorax.

Technical Verdict in "Rad-Jo" Suit Against Medical Publication.—The *Münchener medizinische Wochenschrift* brings the first report of the court decision in the appeal of the suit of the "Rad-Jo" manufacturers against the editor of the *Deutsche medizinische Wochenschrift* for slander on account of the denunciations in the latter journal of this nostrum and its manufacturers. The suit was an appeal by the plaintiff, and the court fined the editor 500 marks because he had styled the plaintiff as "belonging to the Gesindel der Kurpfuscher," "the tag-rag of quacks," which the court decided was technically "slanderous" according to the law, and the fine is inevitable, "gewissermassen als Ordnungsstrafe." Otherwise the court decision is a brilliant justification of the editor and an annihilating criticism of the "Rad-Jo" firm and their method of doing business and advertising. In order to prevent any misuse of this decision by the firm, the court decreed that in publishing the judgment, the reasons for it would have to be published with it. This is a most unusual precaution by a court, but the court deemed it necessary in dealing with this plaintiff. Our exchange adds, "In spite of the imposed fine, we can congratulate our brother editor, Dr. Schwalbe, on this outcome of the suit."

Personal.—Prof. Adrian Stokes has been appointed to the Sir William Dunn chair of pathology by the University of London at Guy's Hospital Medical School.——Dr. H. J. C. Gibson has been appointed medical superintendent of Dundee Royal Infirmary, Scotland, to succeed the late Dr. Fraser.——Dr. Charles Roberts has been appointed lecturer in practical surgery at the University of Manchester, England, and Dr. John A. C. Roy has been appointed clinical lecturer in mental diseases.——The honorary degrees conferred by the University of Edinburg, July 21, included the doctorate of laws on Sir Charles Scott Sherrington, professor of physiology in the University of Oxford.——Dr. Wertheimer was tendered an ovation by friends and students at his last lecture as professor of physiology at the University of Lille, having reached the age limit after thirty-nine years of incumbency. His final lecture was on the pancreas and was mainly a summary of his extensive research on this organ.——A bust of Professor Duret was recently installed by his friends in the faculty of medicine at Lille.——Dr. Hinojar of Madrid was the guest of honor at a banquet at Soria.——Dr. P. Belou of Buenos Aires recently presented to Prof. Ramón y Cajal of Madrid a parchment address sent by the students of the Argentine republic. Dr. Belou was on his way to the otology congress at Paris as delegate from the Buenos Aires Otorhinolaryngologic Society. The *Revista Española* states that he has been asked to give a graduate course in Paris this summer.——Dr. Pi y Suñer, professor of physiology at Barcelona, has been given an honorary degree by the University of Toulouse.——A gold medal was awarded to Dr. Mann of Trieste by the local medical society in recognition of his work in organizing the profession in the Trieste region and leading it successfully during the last nine years.——A souvenir volume depicting interesting events in the life of the Netherlands Medical Association in the last sixteen years was presented recently to Dr. Schreve in appreciation of his services during that time as secretary of the association. Professor Burger made the presentation and called attention to the autographed signatures of 400 medical friends.——Dr. R. Rössle, director of the Pathology Institute at Jena, has accepted a call to the chair of pathologic anatomy at Basel as successor to Hedinger.

Deaths in Other Countries

Dr. **Arthur J. Harries,** specialist in electrotherapeutics, died in London, July 28, aged 66.——Dr. **William F. Litchfield,** former president of the section of diseases of children of the Australasian Medical Congress, died, June 22, from angina pectoris.——Dr. **K. Brendel** died recently in Munich, aged 88. He practiced at Montevideo, during his active professional life.——Dr. **A. Bernard** of Paris, assassinated by a servant.——Dr. **Mertens,** director of the orphan asylum at Cologne.

Government Services

New Reserve Organizations

The Surgeon-General of the Army announces three new organizations in the Reserve Corps: General Hospital No. 56, University of Oklahoma School of Medicine, Oklahoma City; General Hospital No. 43, Emory University Unit, Emory University School of Medicine, Atlanta, Ga., and General Hospital No. 25, University of Cincinnati College of Medicine and Cincinnati General Hospital, Cincinnati.

Changes in Public Health Service

In accordance with departmental policy and regulations governing the U. S. Public Health Service, changes have been made in the administrative personnel of the service at Washington as follows: Asst. Surg.-Gen. C. C. Pierce, in charge of the division of venereal diseases, has been relieved from this duty, and Dr. Mark J. White, formerly engaged in hospital work in Chicago, has been appointed to succeed Dr. Pierce. The tour of duty of Dr. C. H. Lavinder as chief of the division of marine hospitals and relief has been terminated, and he has been succeeded by Dr. F. C. Smith, formerly on duty in Washington as chief of the tuberculosis section of the hospital division. Dr. A. M. Stimson, formerly assistant director of the hygienic laboratory, has been appointed chief of the division of scientific research, to succeed Dr. J. W. Schereschewsky. Dr. A. J. McLaughlin has been relieved from duty as chief of the division of the domestic quarantine and is succeeded by Dr. W. F. Draper, who has for a number of years been engaged in rural sanitation work of the public health service. Dr. R. H. Creel has been relieved as assistant surgeon-general in charge of foreign and insular quarantine and immigration, and has been succeeded as chief of this division by Dr. J. D. Long. Dr. Long is an officer who has had quarantine experience and latterly has been engaged in connection with the treatment of ex-service men. Asst. Surg.-Gen. B. S. Warren is relieved from the division of sanitary reports and statistics and is succeeded by Dr. B. J. Lloyd, who for the past few years has been engaged in administrative duty in the hospital division and in the Veterans' Bureau, in connection with the hospital treatment and care of ex-service men. The assistant surgeon-generals who are being relieved from the bureau have, with one exception, been on duty in the bureau for at least four years and have performed efficient services in the respective administrative posts which they have held. During their tours of duty under the supervision of Surg.-Gen. Hugh S. Cumming, the public health service has performed with credit the task of building up a hospital system and organization for the care of the ex-service men. These hospitals and their administration have only recently been transferred to the Veterans' Bureau by order of the President.

Hospitalization Provided for Spanish-American War Veterans

Under the provision of the Langley bill, approved April 20, 1922, the U. S. Veterans' Bureau is authorized to provide hospitalization to veterans of the Spanish-American War, the Philippine Insurrection and the Boxer rebellion, in hospitals under the control or jurisdiction of the U. S. Veterans' Bureau, when such veterans are suffering from tuberculosis or neuropsychiatric disease. A regulation is in progress of being issued covering the question of hospitalization of these veterans, and it is anticipated that it will be distributed shortly.

Consultation by Correspondence

The division of venereal diseases of the U. S. Public Health Service has recently developed a plan whereby the advice and counsel of several of the nation's most prominent syphilographers and genito-urinary surgeons will be made available to practicing physicians without cost. The plan allows private practitioners to forward information and data concerning their patients either through the state department of health or direct to the Public Health Service in Washington, D. C., who will promptly place it in the hands of the proper specialist for detailed discussion and reply. The plan is referred to as the "Consultation by Correspondence" service.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 1, 1922.

Annual Meeting of the British Medical Association

The ninetieth annual meeting of the British Medical Association has been held at Glasgow. The spacious building of the university provided ample accommodation for all the sections, and the gathering, which was attended by 1,500 members, was a great success from both the scientific and the social standpoint. The foreign guests included Dr. Forbes of New York, Professor Bull of Christiania, and Dr. Hindhede and Dr. Mygind of Copenhagen. No German or Austrian guests were present.

THE PRESIDENTIAL ADDRESS: BRAIN SURGERY

The president, Sir William Macewen, after sketching the history of the University of Glasgow, founded in 1450 by Pope Nicholas V, delivered an address on brain surgery, a subject which he has made his own and on which he gave a memorable address to the association as long ago as 1888. He was then able to show cases of lesions of many different regions of the brain which had been localized and removed by operation. He paid a tribute to the work of other surgeons—Horsley, Godlee and Ballance in this country, and Allan Starr, his "old friend Keen, the youngest man in America," Cushing, D'Antona of Naples, Durante of Rome, Lucas-Championnière of Paris, and Bergmann and Krause of Berlin. Having given an outline of the development of localization, he pointed out that while there are "silent areas," whose functions we do not know sufficiently to determine when they are invaded by small neoplasms, yet when these enlarge sufficiently to involve adjacent parts by pressure or otherwise, the implication of these parts, in definite order, aids in indicating the position of the lesion.

Thus, the symptoms of a small abscess in the middle of the temporosphenoidal lobe above the tegmen are insufficient for a definite diagnosis, but those produced by a large abscess (or tumor) are quite distinctive. The syndrome pointed out by him in 1884 had been confirmed. The symptoms are due to pressure extending upward from the temporosphenoidal lobe to the adjacent structures and affecting them in ordered sequence. They are, first, passivity of the face on the opposite side, which, as the lesion extends, becomes definite paresis, and may end in paralysis. It is important to note that the facial paralysis is cortical, and therefore the eye can be shut, thus distinguishing the condition from facial paralysis due to a lesion of the nerve in the temporal bone. After the face, the arm becomes paretic, but not the leg. Coincidentally with the facial paralysis and sometimes preceding it, there is mydriasis on the same side as the lesion, with ptosis when the lesion is large. The president surveyed the whole subject of the localization of brain tumors, and narrated several cases from his great experience.

PROFESSIONAL SECRECY

At the representative meeting, there was a long and keen debate on the question of professional secrecy—a subject which, as recent letters show (THE JOURNAL, April 15, 1922, p. 1139), is a burning topic in the profession. At the last meeting, the following resolution was passed: "That the association use all its power to support a member who refuses to divulge, without the patient's consent, information obtained in the exercise of his professional duties, except where it is already provided by act of Parliament that he must do so." The council of the association considered that this resolution went too far and seemed to promise support to any member who chose to disobey an order that he should divulge information, and that to hold out that prospect would be to accept wider responsibility than was justified. It was therefore moved that this resolution be rescinded and the following substituted for it: "That the association support in every possible way any member who in the opinion of the council is deemed to have been justified in refusing to disclose any information he may have obtained in the exercise of his professional duties." Considerable opposition was expressed to this weakening of the original resolution, but the motion was carried by a majority. The general sense of the meeting, however, was that the position of the medical witness was not sufficiently protected in the courts and, after discussion, the following resolution was carried unanimously: "That as it is an essential principle of medical conduct that information obtained in connection with the treatment of patients should not be divulged without the consent of the patient concerned, the representative meeting expressed the opinion that the proper preservation of professional secrecy necessitates a measure of special consideration being recognized for medical witnesses in courts of law above and beyond what is accorded to the ordinary witnesses."

THE NATIONAL INSURANCE ACT

The following recommendation of the council was moved: "That the measure of success which has attended the experiment of providing medical benefit under the national health insurance act system has been sufficient to justify the profession in uniting to insure the continuance and improvement of the system." In the debate, the insurance acts were strongly criticized, but the motion was carried, 81 to 21.

THE HOSPITAL POLICY OF THE ASSOCIATION

The report of the council on the policy of the association in regard to the voluntary hospitals, stated in a previous letter (THE JOURNAL, April 15, 1922, p. 1138), came up for consideration. After much discussion and opposition, the paragraphs of the report were carried, with one important exception. The report claimed that a percentage of the payments made by or for patients (other than private patients, i. e., persons who are in a position to arrange directly for medical attendance independent of the hospital) should be passed into a fund for the benefit of the medical staff. Objection was made to this proposal as being much too sweeping. It costs $15 or $20 to maintain a patient in a hospital, and the staffs of the great London hospitals almost unanimously refused to take a percentage of the payments made by patients toward that maintenance. One speaker made the important point that if a patient contributed $10 a week toward maintenance, and the medical staff took $2 of that, it would really come from the gratuitous contributions made toward the support of the hospital. By a vote of 64 to 55, an amendment was carried confining the claim for a percentage of the payments to those made by public authorities and to those made by patients in excess of the cost of maintenance and accommodation.

PRESENTATIONS

The association's gold medal of merit and illuminated address were presented to Arthur Martin-Leake, V.C., F.R.C.S., who has the unique distinction of being the first man to whom was awarded a bar to the Victoria Cross for most conspicuous bravery and devotion to duty throughout the war. In 1902, he was awarded the Victoria Cross (the highest distinction in the British Army for valor) "for great devotion to duty and self-sacrifice, when he went out into the firing line to dress a wounded man under heavy fire from about forty Boers 100 yards away. He then went to attend a wounded officer, and while trying to place him in a more comfortable position was shot three times. He gave up only

when thoroughly exhausted, and refused water until other wounded had been served." In 1915, he was awarded the bar to the Victoria Cross "for most conspicuous bravery and devotion to duty throughout the campaign, especially during the period October 29 to November 8, near Zonnebeke, in rescuing, while exposed to constant fire, a large number of wounded lying close to the enemy's trenches." The same presentation was made to the Right Hon. Sir T. Clifford Allbutt for his long and distinguished services to the profession and the association and in commemoration of his five years' presidency during the Great War.

THE ACTION OF ALCOHOL

Dr. E. Mellanby, professor of pharmacology, University of Sheffield, opened a discussion on the question, "To what extent can alcohol as a beverage be considered to have any influence on the human economy, mental disorders, industrial efficiency and infant mortality?" He described alcohol as a food-drug. As a drug, it might produce drowsiness by the smallest dose; at other times, excitement. Hence, two schools had arisen, one regarding it primarily as a stimulant to the nervous system, the other as a depressant from the first. But the stimulating effects were now generally regarded only as the result of depression of the inhibitory mechanism of the cerebral cortex. Alcohol must be regarded as a narcotic, but this did not, as some supposed, put it out of court either as a beverage or as a therapeutic agent. Narcotics had their sphere of usefulness as certainly as stimulants had. Modern life with its competition, acquisitiveness and restlessness had many undesirable features which made existence almost intolerable to many. Alcohol was taken as a beverage by the average man in order to escape for a time the strain of existence. Small quantities dispersed many of the worries and troubles of life, and so might play a part in restoring to better working order various functions of the body whose action was depressed by anxiety.

Thus, dyspepsia induced or exaggerated by worry might be favorably influenced, and gastric secretion and movements, which had been reduced, restored. Again, in syncope due to fright or pain, the inhibition might be removed by alcohol. But evidence of a direct stimulating action on the heart was not satisfactory. Alcohol was a stimulant only so far as it irritated the nerve endings of the mouth, esophagus and stomach. As to alcohol as a food, experiment had shown that a man who drank in half an hour whisky containing 171 c.c. of alcohol oxidized 10 c.c. an hour and was supplied with fifty-four calories an hour, at the rate of 1,300 calories a day, or about 40 per cent. of his heat loss. But this result had little interest from the medical standpoint, as severe intoxication was produced. But by giving alcohol in small doses, the maximum amount of energy in a unit of time without a toxic effect might be obtained. The food properties of alcohol could be best utilized in diabetes, when, in the modern treatment, ordinary food is withdrawn, as alcohol is oxidized without the production of sugar.

In the discussion which followed, Prof. A. R. Cushny said that although the body could use alcohol as a source of energy this did not mean that it was a desirable food or one to be recommended. The extreme case in which the value of alcohol had been demonstrated, given by Professor Mellanby, was a medical case and did not refer to the normal condition at all. Although alcohol was a food, it was also a poison, and the amount of food obtained from it was surprisingly small. Beer was equivalent only to a sweetened cup of coffee containing milk.

In a paper on the alcoholic psychoses, Dr. John T. MacCurdy of New York maintained a curiously noncommital attitude with regard to prohibition. Contrasting alcohol with other narcotics, he pointed out how much more useful opium was to the physician. As to the harm done, the narcotics rarely, if ever, induced dementia; and, pitiful though the state of the addict might be, the mental aberration or degradation and the economic losses produced were negligible compared with the ravages of alcohol. Only abnormal people used them, and their effect was, as a rule, only to wipe out reality, not to release impulses a too stringent consciousness is on guard against. The opium den showed little trace of sodality. Innumerable people, on the other hand, were made happier and therefore healthier by alcohol in moderation. For one inebriate, at least 100 drank in moderation. What would their fate be in an alcohol-free state? The changes would not be obvious, but they might be serious. True congeniality being under the new regimen essential for lively social intercourse, society would be split up into smaller groups and many would become quite seclusive. Sectionalism was not healthy for society any more than solitude for the individual. A certain number of moderate drinkers craved and needed excitement. There would be danger of their indulging in that kind of political activity in which the mere excitement of strife was an end in itself. As for the truly well-adapted folk, those who approached real normality, abstinence would produce no untoward results. If one could estimate their numbers, one could answer the great question, "Would prohibition be worth while?"

PROGNOSIS AND TREATMENT OF CHRONIC RENAL DISEASE

Prof. Hugh Maclean (London) opened a discussion on the prognosis and treatment of chronic renal disease. The information now obtainable from the renal efficiency tests had greatly altered our conceptions of renal disease. He recognized two main types: (1) hydremic nephritis, in which there were marked edema and retention of chlorids and water, but not retention of nitrogen, and no increase of urea, a type subacute rather than chronic; (2) chronic interstitial nephritis, in which there was little retention of salt and no edema, but tendency to retention of nitrogenous products and to cardiovascular changes. But it was not unusual to get a mixture of the two types. Prognosis should be based on: (1) the general clinical condition, (2) the cardiovascular state and (3) the biochemical tests. He considered the tests for renal efficiency of greater value than are clinical symptoms. He relied most on estimation of the blood urea and the urea concentration tests; but a single blood urea test might indicate only a temporary state. The state of the cardiovascular system must not be overlooked; but in many cases it might be partly affected without much damage of the kidneys. As to treatment, in the hydremic variety, if there was no retention of nitrogenous products, the indication was to give proteins in full amounts, and not withhold them, as was formerly practiced. In the severe cases, however, a low protein diet was best. Decapsulation of the kidney promised good results.

TREATMENT OF TUBERCULOSIS

In the section on public health, Prof. Wynne Sheffield delivered a strong indictment of the present treatment of tuberculosis. The taxpayer was being bled by an expenditure that did not give an adequate return; which, indeed, promoted poverty and public ill health. The fact was seldom appreciated that tuberculosis was a steadily decreasing disease before the public became excited about it. The system of three months' treatment of infective cases, in a hospital or sanatorium, by slightly prolonging life increased the opportunity for disseminating the disease when the patient returned to "domiciliary treatment." The whole of our tuberculosis administration was an example of the ill effects of neglecting the environment in favor of dealing with the individual. Well-intentioned but untrained persons awoke to the fact that large numbers were dying of tuberculosis, and open-air treat-

ment and sanatoriums were boomed. There was an outbreak of "national societies," and provision of sanatoriums at enormous cost. It was now commonly held that the most hopeful function of the sanatorium was the isolation of the infective case. Yet we had been spending $50,000,000 on the treatment of tuberculosis, while there was no money available for elimination of the insanitary areas where we cultivated more cases of tuberculosis in a week than all the sanatoriums could care for in a year. The only practical sanatorium for the people was a reasonably healthy environment in their own homes. By increasing poverty through expensive schemes, we were creating more disease than we relieved.

PARIS

(From Our Regular Correspondent)

Aug. 4, 1922.

New Central Office of the International Red Cross

The central office of the League of Red Cross Societies, which has been located at Geneva, is to be transferred to Paris, rue Quentin-Bauchart 7, for a period of at least two years. In 1924 the council will decide whether it will be permanent. This move was dictated by the desirability of establishing the central office of the league in a center possessing all the means of giving publicity to its acts; also convenient access to records, and immediate contact with other important offices and societies.

Echinococcosis

The Société de pathologie comparée adopted recently the following resolution, which was presented by Drs. Devé, Weinberg and Morel:

Resolved, That private slaughter houses be suppressed and be replaced by communal abattoirs.

That the legislative enactments concerning the seizure of stray dogs and the destruction of animal carcasses be strictly enforced.

That dogs should not be permitted to enter the flaying rooms at all, and the abattoirs only to a limited extent, as controlled by definite regulations.

That the declaration of all animals discovered in the abattoirs to be infested with echinococci shall be obligatory.

The declaration of animals infested with echinococci would result in: (1) the seizure of the animal carcasses so infested and the effective destruction, preferably by fire, of every organ found to contain parasites, and (2) the examination of suspected dogs in the localities from which the infested carcasses originated. Furthermore, it would be desirable, in these same regions, to advise the public, and, more particularly, the butchers and farmers, by articles in the daily papers, by lectures and by the distribution of leaflets, of the danger of animals becoming infested through contact with suspected dogs; informing them, at the same time, of the means that should be taken to avoid such danger. Posters containing illustrations setting forth the nature of the echinococcus should be put up in the schoolrooms, the abattoirs and the flaying rooms.

Congress of University Women

The congress of the international federation of university women, recently held in Paris, brought together 350 delegates, representing eighteen different countries. The attendants of the congress were received by the rector of the Academy of Paris at the Sorbonne, where Mme. Cestre, Miss Caroline Spurgon, and the president of the federation, Dean Gildersleeve of Barnard College, New York, delivered addresses. A reception was given at the Union interalliée in honor of the American delegates to the congress. Monsieur Maurice Casenave, formerly chairman of the French mission to the United States, gave the address of welcome to the American delegates.

The Juvenile Red Cross

The three societies that constitute the French Red Cross (the Société de secours aux blessés militaires, the Union des Femmes de France and the Association des dames françaises) have decided to form, under the banner of the French Red Cross, a special group, with a view to coordinating and developing the charitable activities of the young people in France. This group has adopted the name: Section de la jeunesse française C. R. F. (Croix-Rouge française). It constitutes an integral part of the French Red Cross. It is not an independent society with by-laws of its own. Notwithstanding its obligation to comply with established rules, this juvenile society enjoys the necessary autonomy and may exercise sufficient initiative for its own progress and development. The purpose of this new group is to inculcate in French youth high ideals of brotherhood, charity and devotion.

Regional Organization of the Campaign Against Cancer

Dr. Bergonié, professor of electrotherapy and biophysics of the Faculté de médecine of Bordeaux, delivered an address recently before the medical bloc in parliament on the present aspects of the campaign against cancer in France. He referred to statistics to prove the onward march of cancer, and considered the efficacious weapon against its encroachments that deep roentgenotherapy furnishes. Bergonié pointed out, however, how difficult it was for the majority of Frenchmen—especially those not favored by fortune—to take advantage of the method. The equipment required is expensive and of a delicate character, being far too complicated to allow of its widespread installation. Under these conditions, the best solution of the problem is no doubt a regional organization such as Bergonié has brought about in southwestern France by collecting at various points all available types of equipment. The delimitation of the regions may be made to correspond, for the time being, to the areas tapped by the various universities. The units thus created will fulfil a triple purpose, serving at one and the same time as therapeutic, research and instruction centers.

Rôle of the Pituitary and the Pineal Bodies in Infantile Dystrophy

P. Lereboullet, assistant professor of the Faculté de médecine of Paris, recently reviewed the so-called hypophysial syndromes. Among these, the syndromes of osseous dystrophy (acromegaly, giantism, nanism) appear to be directly associated with changes of the pituitary body. These changes are doubtless brought about, at least to a great extent, by a tumor-like growth (adenoma with eosinophil cells). Hutinel's dystrophy of adolescence would seem to come under this same head. The adiposogenital syndrome, whether associated with nanism or giantism, seems to be not so much the result of functional alteration of the pituitary gland (as was believed for some time) as it is of the simultaneous (or isolated) involvement of the tubero-infundibular region adjacent. So-called hypophysial obesity is open to the same criticism, and appears often more the result of nerve lesions (whether associated or not with ventricular hydrocephalus) than of functional changes in the posterior lobe of the hypophysis. It is also often partly dominated by concomitant genital changes. Recent symptoms of postencephalitic obesity and of obesity associated with hydrocephalus may be better understood under the foregoing assumption than by invoking a hypophysial lesion. The polyuria of diabetes insipidus should be referred to changes in the tuber cinereum, but this syndrome is also frequently an indication of changes in the pituitary body.

In the examination of these cases we should, therefore, continue to look for changes in the hypophysis, and especially for indications of a tumor. But, at the same time, we should not lose sight of the importance of nerve changes, and whenever possible, especially if syphilis has preceded, endeavor to discover any involvement of the basilar membrane and adjacent centers.

Therapeutic considerations will continue, therefore, to take careful account of a possible hypophysial origin of these syndromes, since surgery (hypophysectomy and sellar trephination) and roentgenotherapy may be credited, at the present time, with unquestionably successful results, and since, on the other hand, hypophysial organotherapy, even though, as it would seem, it does not show the mechanism of true organotherapy, exerts a remarkable effect on a great number of symptoms; more particularly, polyuria.

The pathology of the pineal body is not only more limited but also less clearly marked. It is characterized by three types of manifestations: (1) a dystrophic syndrome evidenced by accelerated growth, the height rapidly reaching the maximum but not exceeding it; there is no sign of giantism, but occasionally nanism will be observed; the precocious development of the genital organs and increased pilosity accompany rapid growth and are often very marked; (2) a nervous syndrome, characterized by cerebral hypertension, together with headache, vomiting, convulsions, disturbances of vision, etc., to which are added certain signs revealed by lumbar puncture and notably hypertension of the cerebrospinal fluid, and (3) a peculiar ocular syndrome, distinguished by partial paralysis of the rotary muscles of the eye, due, according to Spiller, to a lesion of the anterior corpora quadrigemina. With this triple syndrome may be combined certain contingent factors: obesity and polyuria, which may be due to a secondary involvement of the floor of the third ventricle. A third sign is closely related to those characteristic of precocious puberty; namely, precocious mental development quite superior to that of children of the same age, as has been noted in several instances.

MEXICO CITY

(From Our Regular Correspondent)

Aug. 6, 1922.

New Members of the Academy of Medicine

Dr. Eliseo Ramirez of Mexico City, and Dr. Edmundo Escomel of Arequipa, Peru, have been admitted as active member and corresponding member, respectively, of the Academy of Medicine. The first submitted as his thesis a paper on physiology of the corpus luteum, and the second, a report on the treatment of amebiasis.

Personal

Dr. Bernardo Gastélum of Culiacan has arrived at Montevideo to take charge of the Mexican legation to Uruguay, a position to which he has been appointed.——Dr. Luis Felipe Obregón, Guatemalan minister to Mexico, has resigned his position because of a change of administration in his country.——Dr. F. Blanco Villalta has been appointed Argentine consul general to Mexico. During the absence of the Argentine minister he is in temporary charge of the legation.——The present Peruvian minister is Dr. I. de Mora.——Dr. Jesús González Urueña, professor of dermatology in the medical school, has resigned as member of the Academy of Medicine.

Statue to Dr. Montes de Oca

Steps are being taken to erect a statue to Dr. F. Montes de Oca. He was one of the most prominent Mexican surgeons, and many of the present surgeons were his pupils. The only discordant note is the plan to erect the statue in one of the most disreputable sections of Mexico City just because he happened to be the head of the Army Hospital, which is located there.

Yellow Fever

A foreigner died from yellow fever at the Gorgas Hospital, Tampico, July 28. It is suspected that he may have contracted the disease at Pánuco, a neighboring town. The public health department is carrying out all pertinent investigations to determine definitely the true nature of the disease. The diagnosis of yellow fever was not accepted immediately, since there had been no case of yellow fever in Mexico since March, 1922, and none at Tampico since January, 1921, and there is no evidence that the case may be from a foreign source. At all events, the antimosquito campaign is being pushed at Pánuco and Tampico, under the supervision of Drs. M. E. Connor and A. Cuarón, to keep the stegomyia under the safety limit and prevent any chance of further spread of the disease, even if the case should really prove to be yellow fever.

Yellow Fever Conference

With Dr. J. H. White, formerly of the U. S. Public Health Service, in the chair, the Second Conference on Yellow Fever was held, August 1-3. After listening to the report presented by the special commission which is conducting the yellow fever campaign in Mexico under the auspices of the public health department, with the cooperation of the Rockefeller Foundation, the delegates recommended to the department the discontinuance of all active work against yellow fever at the end of the present year, as the disease probably will be finally eradicated by that time. In the zones that previously had endemic foci, a supervising service will be continued indefinitely in order to prevent new outbreaks or the importation of patients from abroad. It was also decided to recommend to the department that an invitation be extended to the International Health Board to keep cooperating with the Mexican authorities in the campaign against communicable diseases, and also to take charge of training Mexican sanitary experts, as is done in other countries. In the discussion, proof was had of the cordial relations now existing between Mexican and American scientists, since Dr. White, the American sanitarian, pleaded for the appointment of sanitary attachés in the embassy personnel, and one of the Mexican members urged the exchange of sanitary missions among the nations on the western continent, in order to bring about a better understanding.

Celebration by the Mexican Medical Association

The Mexican Medical Association celebrated the third anniversary of its foundation, July 29, with a literary and musical entertainment. A speech was delivered by Dr. Brioso Vasconcelos, the editor of the *Gaceta Médica de México.*

BUENOS AIRES

(From Our Regular Correspondent)

July 8, 1922.

Outbreak of Smallpox at Avellaneda

For many years the Buenos Aires Public Assistance took great pride in the fact that it had eradicated smallpox through the rigid enforcement of compulsory vaccination and revaccination. Now it has suffered a serious disappointment. From the provinces, especially Cordoba, where the disease has not yet been controlled smallpox occasionally makes inroads elsewhere. Six cases have appeared in the province of Buenos Aires at Avellaneda, a town in the suburbs of the federal capital. A patient came here from Avellaneda and was placed in one of the wards in the Children's Hospital under the impression that the disease from which he suffered was hemorrhagic purpura. It was found later to be a serious case of smallpox. No precautions had been taken, and a few days afterward six of the persons in the hospital were taken sick with smallpox, one of them being a Sister of Mercy, who died within thirty-six hours. The hospital was closed, isolated and disinfected. Dr. A. Larguia was appointed to the position of superintendent, which had been vacant. It was found that in this hospital patients were not vaccinated on admission as in the municipal hospitals. These

cases have brought about a more thorough enforcement of vaccination in the federal capital and the province of Buenos Aires. It seems likely that the outbreak will soon be a thing of the past.

The Academy of Medicine and the Cancer Institute

The Academy of Medicine celebrated its centenary recently. Prizes were awarded to Drs. Belou, Canton, Lagos García, Garzón Maceda and P. Rojas, for works submitted by them. The Cancer institute was inaugurated at the same time. An announcement was made that the academy was contemplating the establishment of an institute of experimental medicine. This originated a conflict, since the directing board of the university claims the authority to regulate the activities of the institute. According to the existing law, the academy is a consulting body without administrative authority, and its activities must be regulated by the directing board of the university. The academy argued that it could take charge independently of scientific institutes. The superior board entrusted the management of the institute to a special commission, mostly of members of the academy but presided over by the dean of the medical school. The academy took umbrage at this and forbade its members to accept appointments on the commission and turned over the institute to the medical school. On the other hand, it has requested the Argentine senate that it be granted absolute autonomy.

Public Health and Hospitals

The National Department of Public Health is pushing its hookworm campaign in Corrientes. It seems as if the provincial authorities are going to adopt special laws on this subject.

Besides the sanitary station established at Catamarca, those at La Rioja, Jujuy and San Luis are already finished. These stations have bacteriologic laboratories, antimalarial sections, disinfecting apparatus, and infant and antivenereal dispensaries.

Field hospitals have already been or will be inaugurated at Chilecito and Chamical (La Rioja), Copacabana (Catamarca), Perico and La Quiaca (Jujuy), Molinos and Güemes (Salta), La Banda (Santiago del Estero), Posadas (Misiones), Paso de los Libres (Corrientes) and Las Cuevas (Mendoza). These hospitals are located near the boundary line, on central traffic lines, and will permit supervision and prevention of the importation of epidemic diseases.

Lectures

A series of lectures on neurology has just been given by Professor Nonne of Hamburg. There has been announced the arrival of F. Krause, the surgeon, and F. Munk (Germans), P. Abrami and J. L. Faure (French), and W. Sharpe (American). The date of Dr. Sharpe's arrival is not yet definite.——Professors Chutro and Escudero's lectures have met with great success. As in previous years, graduate courses will be given this year.

Peptone in the Treatment of Anthrax

Drs. R. F. Vaccarezza, F. F. Inda and R. Posse have published a paper on the treatment of human anthrax based on their experience in the infectious disease clinic of the school of medicine. They treated 204 cases: fifty-six with antianthrax serum Méndez, with a death rate of 19.6 per cent.; ninety-four cases with this serum plus other medication, with a death rate of 20.2 per cent.; twenty-four cases with antianthrax bovine serum, with a death rate of 8.3 per cent.; thirty cases with antianthrax bovine serum plus other medication, with a death rate of 13.3 per cent.; fifteen cases with normal bovine serum, with a death rate of 20 per cent.; twenty-four cases with normal bovine serum plus other medication, with a death rate of 16.6 per cent., and fifty-nine cases with peptone alone, with a death rate of 6.67 per cent. The average mortality was 15.8 per cent. The authors concluded that while normal serum has no action experimentally, it has shown curative powers in human anthrax. Its value is virtually equal to that of immune serums. Peptone in muscular injections (from 10 to 20 c.c. a day, 10 per cent.) showed a therapeutic potency not inferior to anthrax serum, although naturally it has no specific action.

BERLIN

(From Our Regular Correspondent)

July 29, 1922.

The Brain of Ernst Haeckel

A few years before his death, Haeckel (in which Waldeyer afterward followed suit) gave his friend Friedrich Maurer, professor of anatomy at the University of Jena, the commission of examining his brain postmortem. Maurer recently reported the results of his examination to the Medizinisch-naturforschende Gesellschaft in Jena (*Deutsche medizinische Wochenschrift* **48**, Aug. 11, 1922). As would be expected from the great size of Haeckel's head (the immense hats that he wore were a matter of common remark), his brain was unusually heavy. A slight tendency to hydrocephalus was noted, a similar finding having been made in the case of Helmholtz and Adolf von Menzel. Consistent with the advanced age of the subject (86), there was a perceptible senile atrophy, as evidenced by the widened furrows in the frontal region. The motor area governing the movements of the left leg was much impaired, in which connection it should be noted that in 1911 Haeckel suffered a fracture of the left femur, whereby he lost almost entire use of the left leg. The visual area was remarkably well developed, which is not surprising in view of the fact that Haeckel had unusually good eyes, as was shown by his skill in quickly reproducing landscapes in water colors. In marked contrast with the powerfully developed frontal lobe, the preeminent *Denkapparat* (seat of the intellect), the precuneus, or quadrate lobe, a secondary psychic center located in the medial surface of the parietal lobe, near the region of the visual area, was only slightly developed. In contradistinction to Haeckel, the precuneus was unusually well developed in the brains of Helmholtz and the botanist Stahl. Of Stahl it has been remarked that he had very little to say about anything outside his specialty. Maurer does not draw any definite conclusions from these observations, but leaves that to later investigations.

Vital Statistics of German Cities for 1921

According to official publications, the population of the 343 larger cities from which reports are accessible had increased one million, being 25,700,000 in 1921, as compared with 24,700,000 in 1920. It is evident, therefore, that 41 per cent. of the total population of the empire resides in these 343 cities. This remarkable growth of the cities is doubtless due, to a considerable extent, to the influx from the smaller towns and to the immigration from foreign countries. The number of living infants born in these cities was 560,000, or 21.8 per thousand of population, which denoted a falling off when contrasted with the record for the previous year, which was 23.8 per thousand. Since it has been found that economic factors exert a great influence on the birth rate, Dr. Roesle, taking the value of the mark in relation to the American dollar as a basis, has been making a critical investigation of the possible effect of economic conditions. In order to discover the influence on the varying birth rate throughout the twelve months of the year, it is quite evidently necessary to date back nine months the birth rate for each month, since in this manner the month in which the children were conceived is ascertained. In 1921, the birth rate of the urban population con-

tinued to drop until August, or, taking the month of conception, back to November, 1920, in which month not only the value of the American dollar in marks but also the wholesale prices of German goods thereby affected reached the maximum of the observation period. Roesle therefore assumes that the failure of the rational increase in the birth rate for July, 1921 (conception month, October, 1920), to materialize is traceable to the further increase in the cost of living which followed the advance of the dollar and of the wholesale prices of German goods. In the months of February and March, 1921, the cost of living came down, and it is to be noted that there was a corresponding increase in the birth rate for the months of November and December, 1921 (just nine months later). It could not be shown that economic conditions exerted a perceptible influence on the death rate. The year 1921 shows the lowest recorded death rate in German cities with more than 15,000 inhabitants; namely, 13.5 per thousand of population, and excluding deaths among strangers and transients, the death rate was only 11.9. A comparison of the monthly death rates for former years brings out the fact that during the winter months of January, February and March, 1921, especially favorable weather conditions must have prevailed. The abnormally mild winter was followed by an abnormally hot summer, but the summer peak of infant mortality did not reach the terrible percentage of the summer of 1911. Also during the autumn of 1921 the weather conditions were favorable. These favorable weather conditions prevailed elsewhere as well, so that favorable death rates for the year 1921 are to be expected also from other countries. Only for the month of December, 1921, was there a higher death rate than for the corresponding month of the previous year, which is explainable by the severe influenza epidemic. The rapid and continued decrease in the death rate, since the war, is due, for the most part, to the improvement in the food situation.

The Number of Physicians in Germany

The number of physicians in active service in Germany at the present time is vastly greater, in proportion to the population, than before the war. While prewar statistics showed one physician for every 2,000 inhabitants, the record for 1820 is one physician for every 1,551 inhabitants. The total number of German physicians in 1920 was 37,389. The average annual death roll among physicians of Germany contains 800 names. Judging from the increase in the number of physicians, during the last few years, the number of physicians in Germany in 1925 will be around 43,000, or one physician to 1,400 inhabitants. The number of medical students has been decreasing of late. During the winter semester of 1919-1920 the number was 20,888, but in the summer semester of 1921 it had dropped to 16,737.

Marriages

Henry M. Wheeler, Grand Forks, N. D., to Miss Mae McCulloch of Cleveland, at Minneapolis, July 3.

Willard Strickland, Wendell, N. C., to Miss Cleo Mariner of Pocomoke, Md., in Richmond, Va., recently.

Harold Samuel Boquist, Minneapolis, to Miss Marion Scovell of Fridley, Minn., in July.

Clarence Lavan Bittner to Miss Emma Lou Jarvis, both of Sacramento, Calif., August 8.

Stanley Robert Maxeiner, Minneapolis, to Miss Madeline Teas Wood of St. Paul, July 27.

Charles Ambrose McCarthy to Miss Jennie White, both of Lawrence, Mass., July 27.

Frank Earl Adair to Mrs. Dorothy Wilde Moon, both of New York City, August 9.

Frederick Herman Neher to Miss Cecilia Kilbane, both of St. Paul, July 12.

Deaths

George Milbry Gould ✱ Atlantic City, N. J.; Jefferson Medical College, Philadelphia, 1888, died at his home after an illness of three hours from heart disease, August 8, aged 74. Dr. Gould served in the Civil War as a drummer boy in 1861-1862 and as a volunteer in 1864-1865. He received his A.B. degree from Ohio Wesleyan University in 1873, and the A.M. in 1892. He attended the Harvard Divinity School in 1873 and served as a minister until he took up the study of medicine. After receiving his medical degree in 1888 he began practice, specializing in ophthalmology. He was editor of the *Medical News*, 1891-1895; *Philadelphia Medical Journal*, 1898-1900, and *American Medicine*, 1901-1906. Dr. Gould received the first Doyne Medal of the Ophthalmological Congress at Oxford, England. He was especially well known as a writer on medical subjects; while still a student he collaborated in the preparation of a compend of diseases of the eye; in 1890 appeared the first edition of "The Students' Medical Dictionary," the eleventh edition of which was published in 1900; his "New Medical Dictionary," published in 1891, passed through ten editions; the "Pocket Medical Dictionary," published in 1892, was last republished in 1913 and "The Practitioners' Medical Dictionary" passed through various editions from 1906 to 1917. One of his most important books was the "Anomalies and Curiosities of Medicine," written in collaboration with Dr. Pyle. Among his nonmedical works were a book of poems published in 1897, "Biographic Clinics," 1903-1909; "The History of Jefferson College," 1904; "Concerning Lafcadio Hearn," 1908; "The Infinite Presence," 1910, and "The Life and Letters of E. C. Stedman," 1910. He was a man of varied interests with a broad point of view and a thorough, practical writer.

Albert Herman Peters ✱ Colorado Springs, Colo.; Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa, 1900; county physician; served in the M. C., U. S. Army, during the World War; died, August 2, at the Beth-El Hospital, from uremia, following an operation for appendicitis.

Asahel B. Gardner, Greenville, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1885; member of the State Medical Association of Texas; Confederate veteran; formerly city health officer; died, August 5, aged 76.

James F. Jett, Linn, Mo.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, Ky., 1891; member of the Missouri State Medical Association; died, June 11, at St. Louis, aged 66, from pulmonary embolism.

William Walter Wertenberger, St. Joseph, Mo.; University of Michigan Medical School, Ann Arbor, 1892; aged 51; died, August 1, at the Noyes Memorial Hospital from wounds inflicted when struck by a bullet aimed at police officers by a bandit.

George Potter Reynolds ✱ Alameda, Calif.; College of Physicians and Surgeons of Syracuse University, Syracuse, N. Y., 1873; died, August 4, at the Lane Hospital, San Francisco, aged 75, from bronchopneumonia and chronic bronchitis.

Frederick Celso Chirinos ✱ Philadelphia; Temple University Department of Medicine, Philadelphia, 1906; served since 1917 as United States consul for Venezuela, retired on account of ill health; died, August 4, aged 56, from influenza.

Kate I. Graves, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1884; Hahnemann Medical College and Hospital of Chicago, 1885; died, August 12, at Fifield, Wis., aged 70, from heart disease.

Morris Leroy Potts, Trenton, N. J.; Jefferson Medical College, Philadelphia, 1912; member of the Medical Society of New Jersey; served in the M. C., U. S. Army, during the World War; died, July 7, aged 38.

Frederic William Loughran, New York City; Albany Medical College, N. Y., 1890; served in the M. C., U. S. Army, during the World War with the rank of major; died, August 5, aged 53, at River Bank, Conn.

William H. L. Hale, Philadelphia; Jefferson Medical College, Philadelphia, 1882; member of the Medical Society of the State of Pennsylvania; on the staff of the Wills Hospital; died, August 7, aged 62.

Edward F. Quinlan, New York City; Albany Medical College, Albany, N. Y., 1868; formerly president of the Sullivan County Medical Association; died, August 6, aged 76.

✱ Indicates "Fellow" of the American Medical Association.

Robert Henry Baird, Cullman, Ala.; Medical College of Alabama, Tuscaloosa, Ala., 1892; member of the Medical Association of the State of Alabama; died, July 24, aged 56, from heart disease.

Richard F. B. Seaman, Locust Valley, N. Y.; Medical Department of Columbia College, New York City, 1881; member of the Medical Society of the State of New York; died, August 6, aged 68.

Thomas E. Ashinhurst ✱ Waurika, Okla.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, Ky., 1905; died, July 13, aged 45, from chronic nephritis.

George C. Hook, Bellbrook, Ohio; Columbus Medical College, Columbus, Ohio, 1885; member of the Ohio State Medical Association; died, June 13, aged 68, from cerebral hemorrhage.

Herman J. Morganstein, Weingarten, Mo.; Missouri Medical College, St. Louis, 1885; member of the Missouri State Medical Association; died, June 10, aged 63, from cerebral hemorrhage.

John Robert Coleman, Shelton, S. C.; Medical College of the State of South Carolina, Charleston, 1887; died, July 24, aged 57, at the Pryor Hospital, Chester, from lymphatic leukemia.

George Washington Piper, Decherd, Tenn.; University of the South, Sewanee, Tenn., 1909; member of the Tennessee State Medical Association; died, May 29, aged 58, from paresis.

Harry Ulysses Sherman, Easton, Pa.; Jefferson Medical College, Philadelphia, 1892; aged 53, died, August 5, at his summer home in Phillipsburg, N. J., from pneumonia.

Charles Sanford, Board Camp, Ark. (license, Arkansas, 1903); member of the Arkansas Medical Society; veteran of the Spanish-American War; died, July 27, aged 63.

Pierre A. Siegelstein, New York City; Medical Department of the University of the City of New York, 1891; died suddenly, August 9, aged 52, from heart disease.

Albert Barnes Donaldson ✱ Cynwyd, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1899; died, August 6, aged 51, from heart disease.

John C. Campbell, Powell, Ohio; University of Michigan Medical School, Ann Arbor, 1879; Rush Medical College, Chicago, 1882; died, June 26, aged 67.

August J. A. Kuehn, Toledo, Ohio; Medical Department of the University of the City of New York, 1892; died, August 9, at St. Vincent's Hospital, aged 67.

James H. Rowsey ✱ Huntington, W. Va.; Kentucky School of Medicine, Louisville, Ky., 1892; died, August 3, aged 54, from carcinoma of the stomach.

Joseph C. Stevens, Drumright, Okla. (licensed, years of practice); member of the Oklahoma State Medical Association; died, August 4, aged 57.

Richard Carter Smith, Newport, Tenn.; Vanderbilt University Medical Department, Nashville, Tenn., 1881; died, August 9, aged 66.

Julius Thomas Holden, Marianna, Fla.; Medical Department of the University of the City of New York, 1855; died, August 1, aged 88.

William Offee Story, La Salle, Ill.; Eclectic Medical Institute, Cincinnati, 1894; died, August 7, aged 53, from carcinoma of the stomach.

Benjamin C. Stewart ✱ Ute, Iowa; Sioux City College of Medicine, Sioux City, Iowa, 1903; died, August 12, aged 42, from embolism.

Floyd F. Swimley, Forest, Ohio; Starling Medical College, Columbus, Ohio, 1898; also a pharmacist; died, June 24, from heart disease.

James M. White, Covina, Calif.; University of Maryland School of Medicine, Baltimore, 1879; died, July 12, aged 64, from paresis.

Joe W. Robinson, French Camps, Miss.; Louisville Medical College, Louisville, Ky., 1872; died, July 29, aged 83, from senility.

Charles W. Watson, Denver; Medical Department University of Louisville, Louisville, Ky., 1874; died, August 2, aged 70.

Edward A. Russell, Fleming, Pa.; Pennsylvania Medical College, Philadelphia, 1864; died, June 1, aged 84.

John B. Davis, Atlantic City, N. J.; Jefferson Medical College, Philadelphia, 1870; died, August 7, aged 78.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

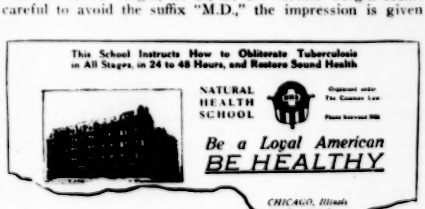
THE NATURAL HEALTH SCHOOL

The "Structural Dietetics" and "True Musical Therapy" of Yergin

During the past few months we have received several inquiries regarding the "Natural Health School" whose address is given as 759 E. 37th St., Chicago. Here is one of the many; it is from a county tuberculosis association in Michigan:

"Have been advised to write you in regard to the standing of the Natural Health School of 759 East 37th Street, Chicago, Ill. Because of their advertising two of our clinic patients were induced to try their treatment for tuberculosis. The result was no help, loss of vitality, health, money and time. Also a cry to our association to try and find out what right they had to do as they are and to try and prevent other tuberculous patients from doing as these two have."

The "Natural Health School" seems to be the latest creation of Milo Erskine Yergin and his wife, M. Kathay Yergin. In Yergin's "literature" he usually styles himself "Dr. M. E. Yergin," although, apparently, he never places the letters "M.D." after his name. He does, occasionally, however, style himself "M. E. Yergin, D. O., D. C." While Yergin seems careful to avoid the suffix "M.D.," the impression is given



Photographic reproduction of the letter-head used by Yergin. Note the claim that tuberculosis can be cured in forty-eight hours.

that he is a graduate and licentiate in medicine. Our records fail to show that Yergin was ever graduated by a medical school or was ever licensed to practice medicine. Part of the Yergin advertising paraphernalia for the present scheme, the Natural Health School, is a publication, the *Natural Health School Journal.* This publication is sometimes issued in typewritten mimeograph form and sometimes printed. The price is $2.00 a year or 10 cents a copy. In the issue of June 27, 1921, several pages were devoted to Yergin's alleged educational qualifications.

SOME OF YERGIN'S QUALIFICATIONS

According to this source of information Yergin "has spent fully FOURTEEN YEARS in the various schools of medicine in postgraduate work." These fourteen years, we are told, were "distributed in the following schools—Allopathic or 'regular,' six years. Several years variously in the Homeopathic, Eclectic, Physiomedical and Chiropractic Schools." We learn further that in 1901 he was a vegetarian chef in New York City and in the same year seems to have been teaching telegraphy and typewriting in a "business college" in Newark, N. J. It is also claimed that Yergin, in 1911 and 1912 "was faculty member of the National School of Chiropractic" and at one time owned a third interest in this institution. We are told that "Dr. Yergin is well versed in hydrotherapy," "has a practical knowledge of osteopathy and spondylotherapy," and, further, that "Dr. Yergin is licensed by the Illinois State Board of Health, and registered in Peoria, Champaign and Chicago."

A search through a number of the Chicago city directories covering the past twenty years discloses the following references that may have some bearing on the present case:

1908: Yergin, Milo E., tel. opr.
1911: Yergin, Milo E., printer.

The name of Milo E. Yergin does not appear in the Chicago city directory for 1910; neither does it appear in any issue subsequent to 1911.

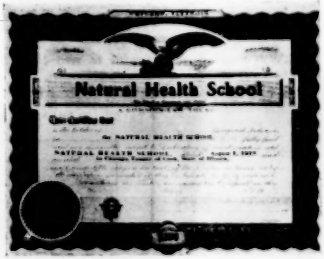
THE NATIONAL HEALTH LEAGUE

A few years ago the Yergins were conducting the "National Health League Sanitarium" (with "Lady and Gentlemen Nurses") at Champaign, Ill., together with the "National Health League Institute" and "The National Health League Food Plant." Then there was an "Institute of Reactive Therapeutics" which held forth at 1701 W. Washington Boulevard, Chicago. From this address was sold Yergin's "Home Study Course of Structural Dietetics" for which "Dr. Yergin usually charged $100," instead of the "ridiculously low" price of $25, at which it was then offered. The "resident course" was $50! This same "course" was also advertised for a while by the "National Health League" from Kidder, Mo. (Population about 300).

In addition to the "course" on "Structural Dietetics," Yergin also had more material merchandise for sale: the "All Natural Salt" put up in two pound packages and sold for 50 cents a package.

In 1915 Yergin was in Nashville, Tenn., where, according to the local papers, "broad plans" were being laid for the "wide and effectual distribution of the products of the League Food Plant," it being the plan "to make Nashville the headquarters of the League and the home of the Health Food Factory."

In 1914 Yergin wrote to a Chicago paper offering it, without charge ("a sacrifice in the interests of humanity"), an epitome of his system of "Structural Dietetics." Attached to the face of the letter sent to this paper was a "sticker," quoting one "J. M. W. Cannon, M.D.," to the effect that "Dr. Yergin is the best and most broadly informed in medical matters, and the most up-to-date in the treatment of disease of any doctor it has been my privilege to meet." Yergin, apparently, was willing to admit it.



Of course the "school" issues diplomas! Here is a greatly reduced reproduction of these works of art.

THE COOPERATIVE FOOD COMPANY AND THE N. H. S.

In 1920 Milo E. Yergin was president of the "Co-operative Food Company" a common law concern conducted first from 4216 Cottage Grove Ave., Chicago, and later from his present address. The Co-operative Food Company advertised "Dr. Yergin's Pus and Pain Chart." The chart sold for $10 and was advertised under the claim that it would enable one "with the simple foods of nature" to control and completely obliterate in from fifteen minutes to fifteen hours any kind of pain and all pus conditions. The "Pus and Pain Chart" was a mimeographed affair of twenty pages. Apparently, it was impossible to work the marvels of the "Pus and Pain Chart" unless one had certain "natural foods described in this chart." There were "Sea Food Baths," "Earth Food Table Salt," "Food Iodine," "Cinnamon Food Oil," "Myrrh Compound" and "Cold Food." All were for sale by the Co-operative Food Company at prices ranging from 25 cents to $3.00 a package. The use of "chemically pure Epsom Salt" was also recommended (under no circumstances for internal use) and this would be furnished at $1.00 a pound, transportation extra. Later, the name of the "Co-operative Food Company" was changed to the "N. H. S. Food Plant."

POTIONS AND PIETY

Reverting again to the "Natural Health School": This seems to combine a strong mixture of religious fanaticism with the practice of the healing art. Scripture is quoted freely and the latest issue of the *Natural Health School Journal* declares that the world will come to an end within the next two years. A most gorgeous description is given of the world to come with a picture portraying the wall around the New Jerusalem, said to be "of pure jasper, at least two hundred eighty-eight feet above its foundations"—with an inset of the Equitable Life Building to show that this wall is as high as the New York skyscraper!

Although Yergin seems convinced that the world will come to an end within the next twenty-four months, and says that no subscriptions to the *Natural Health School Journal* will be accepted after Sept. 1, 1922, he urges his followers to buy stock in the Natural Health School. Possibly it is a misnomer to speak of "buying" this stock, although it is Yergin's own phrase, as one learns by further search that this stock is "non-interest bearing" and "pays no dividends after the manner of this world." Nevertheless, "each person can purchase" as much stock as he desires. The price is $100—cash, after the manner of this world!

Yergin and his Natural Health School, it seems, went through a period of trial from December, 1920, to May, 1921. During this period, we are told "a definite attempt" was made "to destroy the life of Dr. Yergin by occult supremacy." Thus:

"Persons attempting to come to the School Rooms were in several instances prevented by a sudden onsweep of overmastering fear.

"Others were made deathly sick and some fainted in the School Room. Night after night this occurred until the source was recognized and the spiritualistic and occult influences destroyed by God in answer to the prayers of those in charge of the NHS.

"For over two months, finances, which had been regular, suddenly dropped from several hundred dollars per month to less than $25, until the cause was located in spiritualistic and occult opposing effort, and then in answer to prayer, God destroyed the opposing power and at once restored the normal income of the sustaining elements of the NHS."

TRUE MUSICAL THERAPY

Yergin has developed a theory as interestingly bizarre as some of those of Albert Abrams of San Francisco. He puts forward a "True Musical Therapy," whereby, with the aid of a piano "thoroughly in tune, having high quality strings," it is possible to produce vibration rates corresponding to the chemical elements! We read:

"Take for instance, MERCURY and CHLORINE and strike the keys on a well-tuned piano, corresponding to these chemicals on the Key Chart—D in octavo two, and B in octavo seven as marked—and after a few seconds, a sensitive person will respond with a noticeable flow of saliva in the mouth.

"Keep the keys sounding for a few moments and it will start a bowel action."

The possibilities in treating stomachache, soft corns, psoriasis or smallpox by playing the piano, seem unlimited. As not all of us can become virtuosos, Yergin is coming to the rescue—if he has time before the world comes to an end. Says he:

"It is the plan of the writer, as soon as he is at liberty to do so—free from other duties sufficiently—to write out true therapeutical music, and have it perforated on rolls, so that those who wish to have musical healing and health-restoring effects accomplished upon themselves, can do so by placing these rolls in a good player piano.

"This, however, will not work on the ordinary player piano. It must be a piano that is thoroughly in tune, having high-quality strings."

It is fair to assume that when these marvels are consummated the Natural Health School will be in the piano business—putting out instruments that have "high-quality strings." One of Yergin's disciples might work on the possibility of extending this musical therapy to the phonograph trade.

The preposterous nonsense promulgated by Yergin is, apparently, accepted at its face value by many laymen, and not a few so-called "drugless practitioners." The harm that men of this type can do is realized when one reads of individuals who are "treating" sufferers from tuberculosis, cancer and equally serious conditions by the fantastic principles laid down by Yergin and the nostrums sold by him.

Truly, Goethe was right: "Nothing is more terrible than active ignorance."

Correspondence

MEETINGS OF RUSSIAN MEDICAL AND SURGICAL SOCIETIES

To the Editor:—The Russian Pirogoff Surgical Society of Petrograd has announced that the Fifteenth Russian Surgical Congress will take place in September, 1922. The organization committee consists of the council of the society: president, Professor Grekow; vice president, Professor Oppel; treasurer, Professor Tanowsky; secretaries, Dozent Melnikoff and Dozent Lissizyn, in collaboration with members of the surgical society: Professor Turner, Professor Wreden, Professor Schewkunenko, Professor Rokitzky, Professor Poljenoff, Professor Girgolaff, Professor Schaack, Professor Dshanelidze, Professor Cholzoff, Dozent Smirnoff, Dozent Hesse, Dr. Petraschewskaja and Dr. Manniloff.

The leading subjects brought forward for discussion in joint sessions with the congress of medicine, set for the same time, are:

1. Anatomy and pathology of the vascular system: "The Architecture of the Blood Vessels," Professor Schewkunenko; "Functional Changes in Blood Vessels of Isolated Organs in Different Diseases," Professor Krawkoff; "Pathology of the Arterial Wall," Professor Antischkoff; "Pathology of the Vascular Tonus," Professor Lang; "The Peripheral 'Arterial Heart,'" Dozent Kurschakoff; "Gangraena Arterica Suprarenalis," Professor Oppel.

2. Chronic ulcer of the stomach: communications by Professor Martynoff and Professor Grekow.

3. Surgical complications of exanthematic and recurrent fever; communication by Dozent Hesse.

4. Treatment of surgical tuberculosis: communications by Professor Spisharny and Professor Wreden.

The congress will be held at Petrograd between September 25 and October 1. One day will be devoted to questions of urology. Accommodations will be provided for foreign visitors. Steps have been taken to secure lodgings, food and reduced railway fares. A meeting of welcome will be held, September 24. Communications should be sent to the secretaries of the society: Dozent Melnikoff, Petrograd, 33/35, F. Nischegorodskaja, and Dozent Lissizyn, Petrograd 30, 4 Sixth Roshdestwenskaja.

PROF. S. GREKOW, Petrograd.
President, Russian Pirogoff Society.

THE EMBARGO ON DYES AND DRUGS

To the Editor:—I wish to take exception to your editorial appearing in the issue of Aug. 12, 1922, on "Continue the Embargo on Dyes and Drugs."

As a member of the medical profession and a member of the American Medical Association, I protest against the rôle you wish the members to assume. The embargo on dyes and drugs is not a question for the medical profession to decide—unless the question affects the quality of the drugs sold or the direct health of the public. These are not the points on which your arguments are based.

Your arguments savor of politics and directly favor the manufacturers of drugs and dyes and only very indirectly the medical profession and society.

At the present time the prices of drugs, medical supplies and books are exorbitant in my opinion, and any embargo on them would keep these prices up rather than lower them, which would be to the benefit of both physician and patient. (Compare the 1914 prices of synthetic drugs, for instance, acetylsalicylic acid, arsphenamin, phenol, cinchophen and sodium salicylate, with the present.—ED.) I trust you will find space in your columns for my letter, for I should like to obtain the opinion of medical men more competent than I am.

JAMES A. HONEIJ, M.D., Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POTASSIUM SULPHOCYANATE IN TOOTH PASTES

To the Editor:—Please inform me through Queries and Minor Notes whether potassium sulphocyanate could be included in a formula for a tooth paste without risk of its breaking down and forming new and harmful combinations.

L. H. WIRT, D.D.S., South Bend, Ind.

ANSWER.—Potassium sulphocyanate occurs generally, though not constantly, in human saliva in minute amounts (0.1 part per million). Potassium sulphocyanate is decomposed by oxidizing agents in presence of moisture. While it is not likely that this reaction would take place to any serious extent in tooth pastes, the possibility that it might do so (especially in preparations containing potassium chlorate) would seem to be a valid reason why this salt should not be used in dentifrices. Further, there would seem to be no logical reason why the substance should be so used since Gies and Kahn found that the growth of bacteria was not retarded in mediums containing 8 per cent. of the salt (*Dental Cosmos* **55**:40, 1913).

EPINEPHRIN IN ASTHMA

To the Editor:—In regard to the use of epinephrin chlorid hypodermically in cases of asthma for relief of the attacks, please give opinion on the proper dosage and how often this may be repeated within the limits of safety. How often within twenty-four hours or a week would a therapeutic dose be safely given?

B. M. JEWELL, M.D., Lowell, Ind.

ANSWER.—The proper dose here as elsewhere is just enough. This may vary from 0.25 to 1 c.c. or more of the 1:1,000 solution of epinephrin injected hypodermically. The effect may be expected within a few minutes. If the dose acts, it will relieve within twenty minutes. If it does not, trial with a larger dose is indicated. The effect usually does not last longer than two hours—long enough in the ordinary asthmatic attack. In a protracted asthmatic state, the injections may have to be repeated every two hours for as long a time as is required. No ill results have been encountered at two hour interval administrations for a long time.

PANAMA LARVICIDE—OIL SPRAYERS—MOSQUITO CLASSIFICATIONS

To the Editor:—1. What is the best way to prepare the so-called Panama larvicide? 2. Where can oil sprayers be obtained? 3. What is the best oil to be used? 4. Where can I get a publication having a more recent classification of mosquitoes, especially anopheles, than that of Theobald? 5. Where could I find a complete review of Bass' plan for antimalarial work?

L. GARCÍA MALDONADO, M.D., Venezuela.

ANSWER.—1. The Panama larvicide is thus prepared: One hundred and fifty gallons of crude phenol (carbolic acid) having a specific gravity not greater than 0.97 and containing not less than 30 per cent. of tar acids is heated in an iron tank with a steam coil to a temperature of 212 F., and then 200 pounds of powdered or finely broken common resin is poured in. The mixture is kept at a temperature of 212 F. Thirty pounds of caustic soda dissolved in 60 gallons of water is then added, and the solution is kept at the same temperature until a dark emulsion without sediment is formed. The mixture is thoroughly stirred from the time the resin is added until the end. One part of the emulsion to 10,000 parts of water is said to kill anopheles larvae in

less than half an hour, while 1 part to 5,000 parts of water will kill them in from five to ten minutes. The Panama larvicide is mixed with five parts of water and sprayed on pools or along the banks of streams. This larvicide, added to five parts of crude petroleum, favors its spread on the surface of the water. A good method is to place the mixture in a barrel and permit it to drip on the surface of the stream or pond to be treated.

2. Spraying may be done with any ordinary sprinkler or with a hose.

3. A light quality of oil should be used, such as the one known to dealers as Fuel Oil 29-31.

4. Howard and Others: Mosquitoes of North and Central America and the West Indies, published by the Carnegie Institution, Washington, D. C.

5. References to Bass' plan will be found in:

Bass, C. C.: Studies on Malaria Control, *South. M. J.* **12**: 306 (June) 1919; Control of Malaria by Quinin Sterilization of Human Host, ibid. **13**: 250 (April) 1920; Studies on Malaria Control, THE JOURNAL, July 5, 1919, p. 21; Malaria Control Operations in Relation to the Ultimate Suppression of the Disease, THE JOURNAL, July 22, 1922, p. 277.

Mayne, Bruce, and Carter, H. R.: Popularizing a Quinin Formula for the Treatment of Malarial Fever, THE JOURNAL, Oct. 11, 1919, p. 1119.

Rose, Wickliffe: Field Experiments in Malaria Control, THE JOURNAL, Nov. 8, 1919, p. 1414.

Full information on malaria control may be secured from Le Prince and Orenstein's book, "Mosquito Control in Panama," New York, G. P. Putnam's Son, 1916, and in publications of the U. S. Public Health Service and International Health Board of the Rockefeller Foundation.

INTENSITY AND PENETRATION OF ROENTGEN RAYS

To the Editor:—Your reply in Queries and Minor Notes to Dr. Paul Peniston regarding the penetration of roentgen rays is, of course, quite correct, but I see where he has been confused. He has mixed intensity with penetration.

It is well known that the intensity of light regardless of its quality, i. e., color, varies as the square of the distance.

Roentgen rays follow exactly the same law. A photographic plate exposed at a certain distance to a roentgen-ray tube in action will show on being developed a certain amount of silver deposited in the gelatin film on the plate.

If another plate is exposed to exactly the same tube for exactly the same time but at twice the distance, the resulting action on the same area of the plate will only be one quarter as much.

Of course, this has nothing to do with the penetration of the rays, and means only that the quantity of rays reaching a certain area will vary as the square of the distance of that area from the focus of the roentgen-ray tube, or, in other words, twice the distance, four times the exposure—a very useful thing to know in radiography.

W. CONVERS HERRING, M.D., Parsons, Kan.

The Prestige of the Physician and Surgeon.—"The prestige of the physician and surgeon," says the *Journal Médical Haïtien*, "is nowhere what it was at the beginning of the twentieth century. The year 1900 was the surgeon's golden year from all standpoints. At that time the young surgeon, freshly armed with surgical asepsis, passed from one success to another, and appeared to the public as if crowned with the halo of the hero and the demigod. But everything comes to an end, and the world is willing to burn today what it revered yesterday. Thus it is natural that physicians do not enjoy their former prestige. Moreover, the courage of the soldier, who risked his life for others during the World War, has calmed the people's admiration for the surgeon's audacity, who, after all, risks only the life of another. On the other hand, medicine today lacks the sensational cures as for puerperal fever and croup, and the public, spoiled by such wonderful medical successes, have become more and more exacting. In the depths of their hearts they bear a grudge against physicians because, notwithstanding the progress of science, people still die as our ancestors did in the dark ages. The progress of hygiene, the preservation of armies against typhoid, does not interest them. What they want is the physician's guarantee that they will not die."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 5. Sec., Dr. Harry C. DeVighne, Juneau.
DISTRICT OF COLUMBIA: Washington, Oct. 10. Sec., Dr. Edgar P. Copeland, Stoneleigh Court, Washington.
FLORIDA: Tallahassee, Oct. 10-11. Sec., Dr. W. M. Rowlett, Tampa.
GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Oct. 9-12. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.
IDAHO: Boise, Oct. 3. Director, Mr. Paul Davis, Boise.
ILLINOIS: Chicago, Oct. 10-12. Supt. of Registration, Mr. V. C. Michels, Springfield.
KANSAS: Topeka, Oct. 10. Sec., Dr. A. S. Ross, Sabetha.
MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Samuel H. Calderwood, State House, Boston.
MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 3-5. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.
MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, Sept. 7-8. Sec., Dr. Charles Duncan, Concord.
NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. R. E. McBride, Las Cruces.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Ass't. Professional Examinations, Mr. Herbert J. Hamilton, State Education, Albany.
OKLAHOMA: Oklahoma City, Oct. 10-11. Sec., Dr. J. M. Byrum, Shawnee.
PORTO RICO: San Juan, Oct. 3. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.
WEST VIRGINIA: Huntington, Oct. 10. State Health Commissioner, Dr. W. T. Henshaw, Charleston.

California April Examination

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the oral and written examination held at Los Angeles, April 11, 1922. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 25 candidates who took the physicians' and surgeons' examination, 17, including 2 osteopaths, passed, and 9, including 6 osteopaths, failed. Of the 14 candidates who took the drugless practitioners' examination, 7 passed and 7 failed. Thirty-one candidates were licensed by reciprocity, and one candidate received an osteopathic license by reciprocity. Three candidates were licensed on government credentials. Three candidates took the examination to practice midwifery and failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
College of Physicians and Surgeons, Los Angeles	(1920)	76.4
College of Physicians and Surgeons, San Francisco	(1918)	75
Stanford University	(1922)	87.2
Rush Medical College	(1922)	83.7, 85.7, 85.9, 86, 88.6, 89.6, 89.7, 89.9, 91.2
School of Medicine and Surgery, Lisbon	(1919)*	75
University of Moscow	(1909)*	80.5
Medical School of American University, Beirut	(1908)*	77.7
Osteopaths		75, 75
FAILED		
University of Cincinnati	(1921)	55.5
Kyushu Imperial University, Fukuoka	(1913)*	67
Nagasaki Special Medical School	(1918)*	65.5
Osteopaths		67, 68.1, 70.3, 71.8, 72.3 †

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
California Medical College	(1905)	Nevada
Hahnemann Medical College of the Pacific	(1914)	Washington
Bennett College of Eclectic Medicine and Surgery	(1906)	Illinois
Chicago College of Medicine and Surgery	(1914)	Illinois
College of Physicians and Surgeons, Chicago	(1905)	Wisconsin
Hahnemann Med. College and Hospital of Chicago	(1906)	Illinois
Illinois Medical College	(1910)	Washington
Northwestern University	(1909)	Illinois, Oklahoma
Rush Medical College	(1882)	Nebraska
State University of Iowa College of Medicine	(1908)	Iowa
Louisville Medical College	(1888)	Kentucky
Tulane University	(1914)	Louisiana, Tennessee
University of Minnesota	(1907)	Minnesota
St. Louis University School of Medicine	(1908)	Penna.
Washington University	(1906)	Illinois
John A. Creighton Medical College	(1896)	Illinois
University of Nebraska	(1917)	Nebraska
Columbia University	(1889)	Mass.
Eclectic Medical College of the City of New York	(1909)	New York
University of Buffalo	(1905), (1910)	New York
Cleveland College of Physicians and Surgeons	(1902)	Washington
Medical College of Ohio	(1906)	Ohio, (1909) Utah
Ohio State University College of Medicine	(1920)	Ohio
Jefferson Medical College	(1900)	Penna.

University of Pennsylvania	(1899)	New Jersey, New York
Osteopath		Iowa

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Georgetown University		(1901)	U. S. Army
University of Michigan Medical School		(1907)	U. S. Army
University of Pennsylvania		(1897)	U. S. Navy

* Graduation not verified.
† No grade given.

Colorado April Examination

Dr. David A. Strickler, secretary, Colorado State Board of Medical Examiners, reports the oral, written and practical examination held at Denver, April 4, 1922. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 13 candidates who took the physicians' and surgeons' examination, 10 including 5 osteopaths, passed, and 3, including 2 osteopaths, failed. Fifteen candidates were licensed by reciprocity. Eighteen candidates were licensed to practice as chiropractors. Two candidates were licensed to practice chiropody, and one candidate was licensed to practice midwifery. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kansas City College of Physicians and Surgeons		(1920)	76.7
Washington University		(1921)	80.7
University of West Tennessee		(1921)	75
Queen's University		(1919)	75.5
University of Toronto		(1916)	82.4
Osteopaths	75, 76,	76.5,	80.5, 81.6

College	FAILED	Year Grad.	Per Cent.
Jenner Medical College		(1903)*	69.2
Osteopaths		36.5,	65.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama		(1917)	Alabama
Northwestern University	(1906) Wyoming, (1914), (1920)		Illinois
Rush Medical College		(1921)	Illinois
Indiana University		(1921)	Indiana
University of Michigan Medical School		(1921)	Michigan
St. Louis University School of Medicine	(1916),	(1917)	Missouri
Univ. Med. Coll. of Kansas City	(1889) Missouri,	(1903)	Kansas
Washington University		(1905)	Missouri
College of Phys. and Surgs. in the City of New York		(1890)	New York
University of Pennsylvania		(1915)	New York
Marquette University		(1914)	Wisconsin

* Graduation not verified.

Connecticut Reciprocity Report

Dr. Edwin C. M. Hall, secretary, Connecticut Homeopathic Medical Examining Board, reports that from Jan. 21 to March 14, 1922, three candidates were licensed by reciprocity. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
New York Homeopathic Medical College and Flower Hospital	(1900) New York,	(1914)	Maryland
Cleveland Pulte Medical College		(1909)	New York

Virginia June Examination

Dr. J. W. Preston, secretary, Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 20-23, 1922. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Forty-five candidates were examined, all of whom passed. Twelve candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Johns Hopkins University		(1921)	92.5
Maryland Medical College		(1911)	85
Harvard University		(1922)	88.9, 89.5, 90.7
College of Phys. and Surgs. in the City of New York		(1896)	*
Jefferson Medical College		(1921)	81.7
University of Pennsylvania		(1920) 87.6, (1921)	95
Woman's Medical College of Pennsylvania		(1921)	91.5
Medical College of Virginia		(1921) 86.8, (1922)	80.3, 83.4, 83.6, 83.5, 83.9, 84, 84, 84.5, 85.3, 85.6, 87.1, 87.5, 87.9, 88.6, 88.8, 88.9, 89.1, 89.7, 89.9, 90.1, 90.4, 90.5, 92.5
University of Virginia	(1919) 91.4, (1920) 88.6, (1921) 87.9, 90.7, (1922) 79.9, 86.4, 87.3, 87.9, 88, 88.9, 89		

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Johns Hopkins University		(1918), (1919)	Maryland
North Carolina Medical College		(1917)	N. Carolina
University of Cincinnati College of Medicine		(1919)	W. Virginia (1921) Ohio
Western Reserve University		(1917), (1920)	Ohio
Medical College of the State of South Carolina		(1913)	S. Carolina
Chattanooga Medical College		(1902)	Tennessee
Lincoln Memorial University		(1910)	Tennessee
University of Virginia	(1913) Maryland,	(1920)	Louisiana

* No grade given.

Book Notices

CRITÉRES DE L'APTITUDE AU VOL EN AVION. Etude Comparative des Differentes Méthodes D'Examen Employées en France, dans les Pays Alliés et chez les Puissances Centrales. Par Docteur Pierre Perrin de Brichambaut. Paper. Pp. 329. Paris: Louis Arnette, 1921.

This work, written by one who proved himself during the war a fearless aviator, is dedicated to the memory of aviation and medical comrades who fell on the field of honor. It is a full statement and critical review of the medical examination to select fliers in France. The value of this study is enhanced by the account given of the corresponding examination methods in Great Britain, the United States, Italy and Germany. Dr. de Brichambaut writes with authority. He was not only the distinguished commander of a flying squadron, but also a medical examiner who has given much thought to the application and development of the various tests used in the selection of those best fitted for flying. As a pilot from 1912 to 1919 he made good use of his opportunities to observe many of the sensations and reactions incidental to flight at various altitudes. The result is a valuable contribution to aeronautic bibliography which medical aero-officers may read with profit. In view of the great part played by French fliers during the war, it is interesting to learn that the first work on "le mal des aviateurs" appeared as late as 1911, and the first official circular for military candidates was issued in September, 1912. A second official circular was issued in 1914, when political rumblings in Europe suggested trouble ahead. At the same time a survey was made of available fliers which included military pilots, reserve pilots and sportsmen. Soon after war began, these diminished rapidly, less from the enemy than from accidents during flight. As these accidents could not be explained altogether by faults in the machines or by atmospheric conditions, attention was concentrated on abnormal physiologic reactions and on pathologic troubles present in the flier. This led to an official circular defining medical requirements to be insisted on and the tests to be employed when selecting men for military aviators. This circular was based on reports of investigations in various scientific fields, going on since 1911, on problems which had presented themselves either during the course of the medical examination of candidates or during flight. These requirements, modified from time to time as progressive laboratory investigations and field observations suggested, led to systematized tests which pointed out the type of man that might be trained successfully, and the medical care to be taken of those actively engaged. The latter was a very important part of the medical officer's duty, "to prevent staleness," as the English authors name it. The general rules finally laid down were nearly the same in all the allied forces. The conditions demanded by the French Aero Medical Board are fully stated by Dr. de Brichambaut, and the reasons for them sufficiently discussed. This work differs from similar textbooks that have appeared in English in the brevity and clearness with which the essentials are expressed. To take but one example: "Aviation demands a particular resistance in the ear inseparable from anatomic integrity. Tendency to vertigo necessitates exclusion; also ear lesions, especially chronic suppuration and recurring attacks of ear troubles." Following such a statement there is a full discussion of the tests employed to meet this demand. Of special interest is the discussion on the tests for vision, for audition and the integrity of the vestibular mechanism. As one would expect, much care was given to neurologic and psychologic tests. Full use was made of Professor Broca's oscillating chair, in which the candidates could be turned in all the planes of the semicircular canals, and the reactions noted and registered. After all, such tests are but the prelude. The question the examination has to answer is not so much what the individual response to a separate stimulus during a specific test may be, but what is the reaction likely to follow an unexpected movement in an unexpected plane of space requiring the rapid coordination of many afferent stimuli. A man

with a perfect physique may make a bad flier. Neurologic and psychologic tests are necessary, and will not lead one astray if we remember the limitations of the information they give. What has to be insisted on is that the afferent stimuli during each moment of flying be coordinated into a harmonious motor response, a response which must not be too slow, or whose slowness is such that it may be improved by appropriate training. This is a point which requires more insistence than it usually receives.

ANIMAUX VENIMEUX ET VENINS. La Fonction Venimeuse chez tous les Animaux; les Appareils Venimeux, les Venins et Leurs Propriétés; les Fonctions et Usages des Venins; L'Envenimation et son Traitement. Par Marie Phisalix, Docteur en Médecine de la Faculté de Paris. Volumes 1 and 2. Paper. Price, 120 francs. Pp. 1600, with 538 illustrations. Paris: Masson & Cie, 1922.

The first volume of this stately work deals with various venomous animal species, including protozoa, insects and fishes, and the second with the venomous batrachians, lizards and snakes. During the last thirty years Césaire and Marie Phisalix have published more than 200 articles dealing with venomous animals. Césaire Phisalix was one of the discoverers of antiserum for snake venom. After his unfortunate and premature death in 1906, the investigations were continued by Mme. Phisalix, who in 1916 received the Bréant prize from the Academy of Sciences. The present work is a great triumph for this intrepid woman of science. Profusely and artistically illustrated and provided with full bibliographies and indexes, it is the most complete work so far published on venomous animals and venom intoxication, and will be a landmark of continuous value to zoologists, physiologists and physicians.

BLOOD TRANSFUSION. By Geoffrey Keynes, M.A., M.D., F.R.C.S., Second Assistant, Surgical Professorial Unit St. Bartholomew's Hospital. Cloth. Price, $3. Pp. 166, with 13 illustrations. New York: Oxford University Press, 1922.

The fundamental principles, generally accepted indications and technical details of modern blood transfusion are presented clearly and adequately enough. The historical sketch in Chapter I is interesting. The statement (p. 72) that "the corpuscles of Group IV lack iso-agglutinins" must be an error. To claim (p. 52) that in pernicious anemia the patient's life can be prolonged by repeated transfusion for months or even years beyond the time when it otherwise would end hardly seems warranted in face of the great variation in the course and duration of this disease. The possible usefulness of the book in this country is vitiated by a blind and uncompromising adherence to the Moss grouping, now largely abandoned here in favor of the prior Jansky grouping in an effort to avoid unnecessary confusion and eventual disaster. It is unfortunate that the one brief explanation of the differences of these groupings is not correct (p. 71).

PSYCHOLOGICAL EXAMINATIONS OF COLLEGE STUDENTS. By F. Edith Carothers, Ph.D. Columbia University Contributions to Philosophy and Psychology. Volume XXVII. No. 3. Paper. Price, $1.25. Pp. 82. New York: Archives of Psychology, 1922.

This monograph is a study of the scores obtained by three groups of Barnard College freshmen in numerous psychologic tests, college examinations and physical measurements. The aim has been to determine the reliability of the mental tests selected as a measure of innate general and special mental endowment, and their correlation with college marks and physical measurements. In agreement with the work of others, especially Karl Pearson, no relation was found between innate intelligence and physical measurements (height, weight and strength). Moreover, the relation between intelligence, as determined by the tests used and college grades, was found to be too low to be of prognostic value for general success with college studies or for special fitness. That is, the author using her test-scores as a guide cannot predict satisfactorily the student's success in terms of college marks in general or in special subjects of study. In spite of the low correlations, the author defends the value of the tests as a true measure of mental capacity and as a guide for vocational direction. This she infers from a comparison of college grades that are admittedly inaccurate with highly standardized tests that are of mathematically tested reliability. But though this may be true, the proof consists in checking the test-scores against some practical achievement; and among college students, unfortunately, the marks are the only check, leaving the author's point unproved. It is regretted that no relationship between scores on the sixteen tests chosen and the failures at the end of the freshman year has been determined; for in the latter form of guidance, fitness to undertake college training at all, mental tests have shown their most practical value. There is a characteristic absence of any provision for psychiatric study in the author's suggestions for intensive investigation "to form a comprehensive idea of the student's mental and moral caliber."

Miscellany

DERMATOSIS FOLLOWING USE OF CUTTING OILS

The introduction of high-speed metal-cutting machines in industry led to the use of oils to minimize the heat caused by the friction between the cutting tool and the metal under operation. Lard oil was at first the most popular, but owing to the high cost and to the fact that lard oil has a tendency to gum, experiments were undertaken to combine cheaper oils with water. The resultant mixtures became known as cutting compounds. Many manufacturers prepare their own cutting compounds, and some consider their "mixtures" a trade secret. Machine oil, caustic soda, denatured alcohol and kerosene enter into some compounds. Graphite is held in suspension in other cutting compounds. Phenol (carbolic acid) enters into others. Adulterants, such as rosin oil, cottonseed oil, rape oil, aluminum soap and lead soap, are frequently used to lower the cost. Sperm oil, fish oil, whale oil, olive oil, castor oil and lard oil are commonly used.

METHODS OF APPLICATION

The use of cutting oils, says McConnell in *Public Health Reports*, July 21, 1922, has become so universal that few machine shops, however small, do not employ them. Various methods are used to apply the oil to the work. A "drip-can," consisting of a small can with a hole punched in the bottom, may be suspended above the machine. A delivery tube of some flexible material may be attached to the can in order to direct the oil upon the cutting tool. When only a small amount is required, a "dauber," made of waste wound around a stick, may be used to apply the oil. The larger plants apply the oil by forcing it by means of a pump through pipes leading from a central reservoir to individual machines. Oils are used over and over again for the sake of economy. Various devices depending on sedimentation, filtration, straining, magnetization, or a combination of two or more of these systems, are used to free used oil of steel shavings, or dust, or other suspended foreign material. A Detroit automobile plant which uses 1,300 gallons of oil daily, according to McConnell, reclaims 500 gallons.

REQUEST FOR ASSISTANCE

Many industrial plants requested the U. S. Public Health Service to inform them of methods in use to prevent the dermatosis caused among their employees by cutting oils and compounds. McConnell's report covers the study of 2,000 workers, whose occupations require contact with one or more of a large variety of cutting oils. Of that number, 557, or about 27 per cent., had a dermatosis characteristic among metal-cutting operatives.

LESIONS

The skin affection, commonly called "oil acne," or "oil pimples," starts as comedones in the orifices of the hair follicles. Each comedo becomes a reddish, circumscribed, macular lesion with a slight tendency to elevation. They develop rapidly into papular lesions, about the size of a pea, with circular bases and conical tops through which the cilia protrude. They are hard, discrete, and commonly distributed on the dorsum of the hands, both surfaces of the forearms and the anterior surfaces of the thighs. Workers who have

a habit of brushing their hair back with their hand have lesions on the forehead and face.

SYMPTOMS

The only symptom complained of in uncomplicated cases is itching, which at times is intense. These papules, on expression, discharge a hard, sebaceous substance. One of two things happens after the maculopapular eruption appears: The lesions retrogress or become infected and develop into pustules and abscesses. In three of the cases examined, the lesions grew into varying-sized tubercles, apparently neoplastic in type, very firm, and pink.

THEORIES AS TO CAUSE

The infectious theory, McConnell says, assumes that cutting oils and lubricating compounds support the growth of pyogenic micro-organisms, which gain entrance to the skin through minute punctures made by metal chips carried by the oil to the skin. If so, the dermatosis should be prevented by sterilizing the oil and removing the metal chips from the oil. However, the dermatosis is not prevented either by sterilization or by the use of disinfectants, and in two plants which removed the metal chips by magnetism, 22 and 30 per cent. of the employees, respectively, had the dermatosis.

The chemical theory has gained popularity, and it cannot be denied that certain ingredients found in some of the oils are capable of causing a dermatosis. However, examination of the primary lesions fails to reveal an inflammation such as would be expected from chemical irritation. Furthermore, chemical irritants probably would act upon the interfollicular skin areas, where no lesions are found. Added proof that chemicals peculiar to the oils do not necessarily cause this dermatosis lies in the fact that men working in coal dust or in any inert powder frequently develop identically the same sort of skin lesion.

The theory of mechanical obstruction of sebaceous ducts in dry-skinned persons, the author continues, best fits the facts in this investigation. Age, length of exposure, diet, complexion and other possible factors were studied in men working on the same machines and under the same conditions, to find a clue to the cause. The only difference found was that a large majority of those having the dermatosis had a dry skin, while those not having the dermatosis had an oily skin. Workers having naturally a very dry skin develop the dermatosis rapidly, while those with oilier skin require a greater length of time.

McConnell concludes that the weight of evidence incriminates cutting oils and lubricating compounds of all types carrying extraneous matter in suspension as the primary cause in producing the initial dermatosis by obstructing the sebaceous orifices, and that the underlying or basic cause is a deficiency of the natural oiliness of the skin. Infecting organisms, partly through the patient's scratching, enter through the primary dermatitic lesions, and cause a secondary infection as a complication. In other cases, abrasions produced by small metal shavings become infected and complicate the dermatosis. The condition so arising is not, however, allied to the primary dermatosis.

PROPHYLAXIS AND TREATMENT

Prevention depends, first, on thorough cleanliness, and, secondly, on the application of wool fat or wool fat and castor oil to the exposed skin surfaces at the beginning of the work period.

INFLUENZA OUTBREAK IN THE WINTER OF 1921-1922

The return of influenza in pandemic form in November and December, 1921, was synchronous with a marked increase in the death rate over a large area. Northwestern Europe appears to have suffered most heavily, says the Health Section of the League of Nations in "Epidemiological Intelligence." The time of maximum intensity of the outbreak varied in different places from December to February. The epidemic began with a great number of fairly mild cases in November, accompanied by an increase in the general mortality rate. The fatal cases, however, do not appear to have presented symptoms characteristic of epidemic influenza; at any rate, the deaths were not ascribed to that disease. A marked increase in the number of deaths returned as due to heart disease is particularly noteworthy. A similar coincidence, continues the report, was observed in the milk influenza outbreak in London in November, 1919, which caused only about twenty deaths a week directly due to influenza, but which nevertheless was accompanied by a 70 per cent. increase in the mortality from heart disease, and an abnormally high death rate from diseases of the respiratory tract. Similar observations were made under the apparently very mild outbreak in Holland during the winter of 1920-1921.

HEALTH MATTERS IN BULGARIA

For the administration of the public health service, Bulgaria is divided into fifteen sanitary districts, and the districts are subdivided into 114 sanitary counties. There is a minister of public health, who is also the minister of internal affairs; a director of public health, and a supreme medical council consisting of eight physicians and an attorney. Each sanitary district, and each sanitary county, has a physician in charge of the public health work. In addition, there are six regional malaria medical inspectors, three quarantine medical officers, and six microscopists. There are fourteen first class hospitals, seventeen second class, and fifty-one third class. There are three tuberculosis sanatoriums, two hospitals for the insane, and one invalids' institute. The population of Bulgaria is about 5,000,000.

During the occupation of northern Bulgaria in 1913, the Roumanians carried away all hospital equipment, and except for a few of the first class hospitals, the hospitals are sadly in need of all kinds of equipment. For this fiscal year, 141,000,000 leva was appropriated for the public health service, while 542,000,000 leva was appropriated for the war ministry. Salaries are classified. A county physician, single, gets six dollars a month.

The Bulgarian populace is not well informed on health matters, and does not therefore take kindly to preventive measures. All sorts of quacks flourish. There are many talisman-writers, fortune tellers, necromancers, readers and demon-expellers. The death rate is high generally, but especially high among native Bulgarians, and much less among other nationalities within the kingdom.

Medicolegal

Sanatorium and Physicians' Charges; Circumstances to be Considered

(Young Bros. v. Succession of Von Schoeler (La.), 91 So. R. 551)

The Supreme Court of Louisiana, in affirming a judgment in favor of the plaintiffs, says that they were the owners of a sanatorium in which Mrs. Von Schoeler was a patient from Oct. 10, 1919, until her death, March 3, 1920. The demand on which they sued was for $3,400, made up of the following items: For room and board, and for care and attention of Mrs. Von Schoeler in the sanatorium during the time in question, $700; for constant medical attention, nursing, and medicines for various diseases named (but not stated by the court), from May 20, 1919, to March 3, 1920, $2,500; and for the amount paid consulting physicians, $200. There was no serious objection to the first and third items of the account, which, under the evidence, appeared to be reasonable and proper charges. With regard to the item of $2,500, the theory of the opposition was that the charge was exorbitant and disproportionate to the services rendered to, or that were required by, Mrs. Von Schoeler; in other words, that she was not a sufferer from all or any of the numerous maladies for which the plaintiffs claimed to have treated her. But the testimony of the defendant, which was directed in the main toward proving that fact, failed of its purpose. On the other hand, there was testimony for the plaintiffs that the patient was a very exacting and troublesome one, and that the charges were fair, just and proper. One physician testified that all medical societies and associations had adopted a plan to charge the patient according to his income; that this plan was fair to the patient and to the physician, and that specialists ordi-

narily charged larger fees than a general practitioner. The father of the plaintiffs, a physician, who was corroborated in all material details by the testimony of the plaintiffs, testified that Mrs. Von Schoeler was a very sick woman, very temperamental, and hard to manage; that she was very exacting and required close attention; that he attended her from May 20, 1919, three or four times a day every day or so and possibly one or two times at night, and that he would have to remain with her for several hours; that she had diseases that, in one of her temperament, required a great deal of attention in order to get any results; that when she came to the sanatorium she was more exacting and more trying, and that she grew worse; that she was in bed three fourths of the time; that she was a chronic invalid; that she had cirrhosis of the liver and other diseases as well as what is known as anxiety neurosis; that she died of edema of the lungs and dilatation of the heart and contributing causes. It also appeared in the evidence that she was addicted to strong drink, and for twenty months of the last two years of her life was in a sanatorium for treatment.

Law and jurisprudence, the court goes on to say, have not laid down any hard and fast rule for guidance in the matter of physicians' charges. Courts must of necessity, to a great extent, rely on the opinions of reputable members of the profession as to the value and character of the services rendered; and such charges are not to be determined wholly on the skill of the physician, nor on the amount of services rendered; but the value of the patient's estate and his ability to pay may be taken into consideration. In *Succession of Levitan*, 143 La. 1027, 79 So. R. 829, the court said that it was common information that physicians and surgeons do not regulate their charges by any fixed standard of pecuniary value, but, to a certain extent, base them on the ability of the patient to pay. The property of the succession of Mrs. Von Schoeler was inventoried at about $40,000. It was worth more than that sum. In view of all the testimony, this court is not prepared to say that the charges made by the plaintiffs were unreasonable or excessive.

Validity of Regulations Requiring Vaccination

(State ex rel. Lehman v. Partlow et al., Directors of School Dist. No. 1, Thurston County (Wash.), 205 Pac. R. 420)

The Supreme Court of Washington, in affirming a judgment that, on demurrer, quashed an alternative writ of mandate and dismissed the action, says that the facts were not in dispute. In July, 1921, the state board of health adopted a regulation which requires that, if smallpox exists in a community, the county or city boards of health shall provide free vaccination for persons having no funds to procure vaccination from other sources; and, when smallpox exists in a community, no child, teacher, or janitor shall be permitted to attend school, teach or labor therein, without presenting satisfactory evidence of having been successfully vaccinated within seven years; with a proviso relative to any one who should not be vaccinated because of some physical defect or disease. In January, 1922, the director of public health of the state notified the county health officer of Thurston County, and the city health officer of Olympia, which comprises School District No. 1, that, in his opinion, owing to the prevalence of smallpox in the public schools of the district, all pupils in the schools in question were "contacts," and that, because of the conditions, the regulation of the state board of health should be vigorously enforced; and the county health officer gave notice of said directions to the directors of the school district. On January 19, the directors issued a bulletin or notice which stated that:

> Prior to Feb. 1, 1922, it will be necessary for every pupil, janitor and teacher in the schools of Thurston County to present to the school authorities either a physician's certificate showing that the individual concerned has had smallpox or a similar certificate evidencing vaccination within the last seven years. Those who do not comply with the foregoing regulations are to be excluded from the schools and isolated in their homes for a period of eighteen days immediately following the date mentioned.

A minor daughter of the relator's was then a pupil in one of the schools of the district. It was not claimed that she was in fact a disease carrier, or was other than a normal, healthy child. She, however, failed to comply with the regulation of the state board of health, or with the notice from the school board, and was accordingly excluded from the school in which she was enrolled on Feb. 1, 1922. Thereupon, her father filed his affidavit in the superior court seeking a mandate requiring the school directors to readmit her to the public schools. The question presented was one of law only. Had the state board of health power to promulgate and enforce the regulation mentioned? The supreme court holds that it had, declaring that, since in *State ex rel. McBride v. Superior Court*, 103 Wash. 409, 174 Pac. 973, after a full investigation and consideration, the supreme court, in an exhaustive opinion, upheld the statute, and declared the acts and rulings of the board of health final and conclusive and not to be reviewed by the courts or denied because the authority might be abused or the law maladministered, and that the finding of a fact by a properly constituted health officer was final and binding on the public as well as on the courts, nothing further need be said, especially as there was no allegation or contention that the action complained of in this case was in any wise arbitrary, capricious or unreasonable.

Some contention was made that because school directors are not specifically named in the statute as among the officers whose duty it is to enforce the rules and regulations of the state board of health, the notice given by the respondents should be held to be ineffectual for any purpose. But the order of the director of health, being valid, was binding on all affected thereby, and the respondents, as school directors, had no more right to disregard or disobey that order in their official capacity than they would have as individuals. It was further urged that the provision in their notice with reference to isolation was not embraced in the regulation of the state board of health, and that the school board had no authority to add anything thereto, or to adopt rules of its own on that subject. But the eighteen-day isolation period having fully expired before this case was reached for hearing in the supreme court, the question became a moot one only, which the court would not then consider or decide.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Minneapolis, Sept. 19-23. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Sec'y.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Albany, N. Y., Sept. 19-21. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 18-20.

American Child Hygiene Association, Washington, D. C., Oct. 12-14. Miss G. B. Knipp, 111 Cathedral St., Baltimore, Md., Secretary.

American Electro-Therapeutic Association, New York, Sept. 19-22. Dr. Richard Kovacs, 223 E. 68th St., New York, Registrar.

American Public Health Association, Cleveland, Ohio, Oct. 16-19.

American Roentgen Ray Society, Los Angeles, Sept. 12-16. Dr. H. E. Potter, 122 S. Michigan Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Oct. 12-14. Col. James Robb Church, M. C., U. S. Army, Medical Museum and Library, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, Oct. 3-5. Dr. F. B. Stephenson, Metropolitan Bldg., Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 10. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Muncie, Sept. 27-29. Dr. Charles N. Combs, Terre Haute, Secretary.

Kentucky State Medical Association, Paducah, Oct. 16-19. Dr. J. A. McCormack, 532 W. Main St., Louisville, Secretary.

Medical Association of the Southwest, Hot Springs, Ark., Oct. 4-6. Dr. W. H. Bailey, 115 West 21st Street, Oklahoma City, Okla., Sec'y.

Minnesota State Medical Association, Minneapolis, Oct. 12-13. Dr. Carl B. Drake, Central Bank Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Rochester, Minn., Oct. 10-12. Dr. Henry Enos Tuley, 244 Francis Bldg., Louisville, Ky., Secretary.

Missouri Valley Medical Society of the, St. Joseph, Mo., Sept. 21-22. Dr. Charles W. Fassett, 115 E. 31st St., Kansas City, Mo., Secretary.

Nevada State Medical Association, Reno, Oct. 6-7. Dr. Horace J. Brown, Goldfield, Secretary.

Pacific Coast Oto-Ophthalmological Society, Salt Lake City, Sept. 14-16. Dr. Edward D. LeCompte, Boston Bldg., Salt Lake City, Utah, Sec'y.

Pennsylvania, Medical Society of the State of, Scranton, Oct. 2-5. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Utah State Medical Association, Salt Lake City, Aug. 31-Sept. 2. Dr. W. L. Rich, Boston Bldg., Salt Lake City, Secretary.

Vermont State Medical Society, Burlington, Oct. 12-13. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Washington State Medical Association, Tacoma, Sept. 5-6. Dr. C. H. Thomson, 508 Cobb Bldg., Seattle, Secretary.

Wisconsin, State Medical Society of, Green Lake, Sept. 6-8. Dr. Rock Sleyster, Wauwatosa, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

July, 1922, **2**, No. 4

*Interepidemic Influenza. E. O. Jordan, Chicago.—p. 325.
Anthrax Hazard in Pennsylvania Tanneries. H. F. Smyth, Philadelphia.—p. 346.
Decomposition of "Freedy" Salmon. A. C. Hunter, Washington, D. C.—p. 368.
Larvae of American Anopheles Mosquitoes, in Relation to Classification and Identification. F. M. Root, Baltimore.—p. 379.
Mosquitoes and Other Bloodsucking Flies from Porto Rico. F. M. Root, Baltimore.—p. 394.
*Criticism of Supposed Rodent Origin of Human Giardiasis. C. E. Simon, Baltimore.—p. 406.
Systematic Relationship of Giardia Lamblia Stiles, 1915, from Man and Giardia Agilis Kunstler, 1882, from Tadpole. R. W. Hegner, Baltimore.—p. 435.
Comparative Study of Giardias Living in Man, Rabbit and Dog. R. W. Hegner, Baltimore.—p. 442.

Interepidemic Influenza.—Jordan asserts that there is no escape from the conclusion that the so-called influenza of interepidemic years is in whole or in part different from the influenza of the great epidemics of 1918 and 1920. A great many of the deaths recorded under the name influenza in the years between epidemics are certainly not due to the same microbic causes as those occurring in epidemic years. Localized outbreaks and indeed individual cases of influenza-like disease and of all mild respiratory diseases seem to demand more searching study than they have yet received, bacteriologically, epidemiologically and clinically.

Rodent Origin of Human Giardiasis.—Simon believes to have established that specific differences exist between the human giardia and the mouse form, as was first suggested by Bensen and subsequently by Kofoid and Christiansen, and that similar differences also exist between the human form and the meadow mouse form and between the latter and the mouse form, as was first suggested by Kofoid and Christiansen, though in both instances on what the authors regards as insufficient evidence. It seems warrantable to assign species names to the three forms, and Simon accepts that of *muris* for the mouse form, as suggested by Bensen, and the name *microti* for the meadow mouse form. He believes that Stiles is justified in rejecting Kofoid's term enterica and that according to the rules of nomenclature the organism should henceforth be known as *Giardia lamblia*. Culture rats and wild rats cannot be infected with *Giardia lamblia*, while they may readily be infected with *Giardia muris*. Culture rats, wild rats, and wild mice cannot be infected with *Giardia microti*. There is no basis for the assumption that the human infection is referable to either rats, mice, or meadow mice. Simon believes that the human infection is of human origin.

Archives of Ophthalmology, New Rochelle, N. Y.

July, 1922, **51**, No. 4

Ocular Manifestations of Internal Secretion. E. Fuchs, Vienna.—p. 307.
Relations Between Eye and Ear (Including Vestibular Organ). J. Van Der Hoeve, Leiden, Holland.—p. 321.
Intracapsular Expression Extraction of Cataract. A. S. and L. D. Green, San Francisco.—p. 338.
Present Status of Vaccine Therapy in Eye Diseases with Special Reference to Autogenous Vaccines: Report of Cases. L. H. Lanier, Texarkana, Ark.—p. 349.
Tendon Tucker and Method of Suturing. F. E. Burch, St. Paul.—p. 360.
Eviscero-Neurotomy with an Endothesis as Substitute for Enucleation. T. J. Dimitry, New Orleans.—p. 365.
Causes of Blindness Among Filipinos as Observed in Philippine General Hospital Dispensary. A. S. Fernando, Manila.—p. 374.
Three Cases of Tuberculosis of Conjunctiva. F. Nicolas, Manila.—p. 379.
Intraocular Foreign Body. L. D. Brose, Evansville, Ind.—p. 384.
Ocular Pemphigus. L. B. Whitham, Baltimore.—p. 389.

Boston Medical and Surgical Journal

July 27, 1922, **187**, No. 4

*Value of Basal Metabolism Determinations in Diagnosis and Treatment of Hyperthyroidism. H. F. Stoll, Hartford, Conn.—p. 127.
*Moisture Absorbing Efficiency of Carbon Dioxid Absorbents for Metabolism Apparatus. R. E. Wilson, Boston.—p. 133.
*Mortality from Diabetes. F. L. Hoffman, Newark, N. J.—p. 135.
*General Paresis at Danvers State Hospital. H. M. Watkins, Hathorne, Mass.—p. 137.
*Analysis of 500 Cases Referred to Boston City Hospital Outpatient Heart Clinic. B. E. Hamilton and J. E. Hallisey, Boston.—p. 139.
Some Facts Concerning Digitalis. T. J. O'Brien, Boston.—p. 141.

Value of Basal Metabolism Determination in Hyperthyroidism.—As deviations from the normal in basal metabolic rates are not always dependent on diseases of the thyroid, Stoll urges that a very careful history and painstaking examination should always precede the basal metabolism determination. This clinical study, if sufficiently thorough, will suffice to make the diagnosis in many cases. There are borderline cases, however, in which the metabolic rate will prove very helpful. In conjunction with the usual clinical signs of toxicity the basal metabolic rate assists materially in deciding what form of therapy is more advisable. As changes in the metabolic rate frequently precede changes in the clinical picture, metabolism estimations at stated periods afford a valuable means of checking any therapeutic measure, either medical or surgical.

Correction Table for Carbon Dioxid Absorbents.—In order to retain the advantage of noncaking absorbents for carbon dioxid and yet eliminate the errors due to calculating on the basis of the ordinary tables, a correction table has been constructed by Wilson by modifying Clarke's table to allow for 80 per cent. relative humidity in the warm air as measured. This change decreases Clarke's correction factors by amounts varying from 0.013 at 15 C. to 0.030 at 30 C.

Mortality from Diabetes.—Hoffman presents the results of a study of the mortality from diabetes in foreign countries. The range in relative frequency is extraordinary, reaching a maximum of 38.4 per 100,000 of population in the Island of Malta, 18.1 for the Isle of Man, and 16.1 for the Island of Jamaica, 1.1 for the Bahamas, and 1.0 for Venezuela. The average diabetes death rate for the United States registration area is 16.4 per 100,000 of population. The American death rate is decidely above the normal average of 11.8 for England and Wales, and while unquestionably somewhat affected by the relatively large Jewish population in the large cities, this factor cannot be considered as primarily responsible for the marked excess. The normal diabetic death rate of New York City for the five years ending with 1919 was 19.8 per 100,000 of population, or higher than the maximum rate reported for the city of Berlin, 17.9 per 100,000; or for Copenhagen, Denmark, for which the rate is 17.1; but for Amsterdam, Holland, the rate is 15.9. The minimum rates are reported for Tokio, Japan, or 4.1; for Singapore, or 4.3; for Manila, P. I., or 4.5; and for the City of Mexico, or 5.4. For a few of the cities for which the information is available the following rates, according to sex, at ages 20 and over, are of interest: Berlin, Germany, males 31.4 and females 20.8 per 100,000; Copenhagen, Denmark, males 28.1 and females 20.9; Florence, Italy, males 27.1 and females 14.5; Christiania, Norway, males 24.4 and females 14.5; Victoria, B. C., males 12.0 and females 13.3; Montevideo, Uruguay, males 13.7 and females 25.9; London, England, males 16.8 and females 14.8; and Singapore, Straits Settlement, males 5.5 and females 6.7.

Antisyphilitic Treatment for Paresis.—Watkins urges that routine administration of antisyphilitic therapy is called for in all cases of paresis. Practically no ill effects have been observed under intensive treatment. Twenty per cent. are able to "carry on" outside by the aid of the social service department and outside clinics. Seventy-seven per cent. of those in hospital are able to do some form of useful work, while, of the sixty-seven studied, only nine are in bed, and only four of those continuously.

Rheumatic Heart Disease.—From a survey of 500 unselected cases of heart disease made by Hamilton and Hallisey it appears that rheumatic heart disease is extraordinarily fatal, at any rate among children and adolescents. This series suggests that the great majority of adolescents with rheumatic heart disease have an expectation of life of less than a decade. Forty-nine of 202 unselected rheumatic heart disease cases, under careful observation, showed more or less strong evidence of an active infectious process of the heart. Activity of rheumatic heart disease is easily overlooked. Approximately 15 per cent. of cases referred to a general heart clinic

have neurasthenia with symptoms suggesting heart disease. These cases usually have been diagnosed wrongly as cases of true heart disease.

Delaware State Medical Journal, Wilmington

April, May, June, 1922, **13**, No. 2

Profitable Reading for the Doctor. J. McFarland, Philadelphia.—p. 9.

Johns Hopkins Hospital Bulletin, Baltimore

July, 1922, **33**, No. 377

*Studies in Asymptomatic Neurosyphilis. J. E. Moore, Baltimore.—p. 231.

*Biochemistry of Tuberculosis. E. R. Long, Chicago.—p. 246.

Dissemination of Bacteria in Upper Air Passages. III. Relation of Bacteria to Mucous Membranes. A. L. Bloomfield, Baltimore.—p. 252.

*Changes in Omentum of Rabbit During Mild Irritations; with Especial Reference to Specificity of Mesothelium. R. S. Cunningham, Baltimore.—p. 257.

Asymptomatic Neurosyphilis.—It is shown by Moore that early invasion of the central nervous system in syphilis is common, occurring in 26.4 per cent. of a series of 352 patients with primary and secondary syphilis. Of ninety-four early neurosyphilitics, seventy-two were asymptomatic, and were detected only by the routine application of spinal puncture. Early asymptomatic neurosyphilis may be divided into three subgroups on the basis of the spinal fluid findings and the response of the various groups to treatment. Invasion of the central nervous system probably occurs in the majority of all patients with syphilis, and unless the course of the disease is influenced from without (by treatment), this invasion takes place in most instances within the first year after infection. The ability of the invading organisms to produce clinical neurosyphilis probably depends on the defense mechanism of the individual patient. The experimental and clinical evidence bearing on these points is reviewed. Early asymptomatic neurosyphilis is more common in the white race than in negroes, but is equally frequent in men and women, of either or both races. Prolonged regular treatment influences favorably the incidence of early asymptomatic neurosyphilis. Irregular or lapsing treatment, on the other hand, markedly increases its incidence. A study of this material from the standpoint of strains of *Treponema pallidum* furnishes no support to the theory of the existence of a neurotropic strain of organism. That the spinal fluid abnormalities of early asymptomatic neurosyphilis are evidence of actual anatomic damage to the nervous system is indicated by the frequency of certain minor subjective and objective neurologic signs in this class of patients. An appreciation of these signs, and of the significance of a persistently positive blood Wassermann reaction in treated patients, furnishes a clinical diagnostic aid for the recognition of neurologic invasion. Spinal puncture is an indispensable routine procedure in the management of early syphilis. Unless it is employed, many patients will be discharged as cured who are nevertheless candidates for clinical neurosyphilis. It should be performed as a routine after the first or second course of arsphenamin, and unless a lapse in treatment occurs, need not be repeated (if negative) until the end of treatment and the probation period. All three groups of asymptomatic neurosyphilis may be serologically and clinically "cured" by appropriate methods of treatment. Early asymptomatic neurosyphilis is the forerunner of clinical neurosyphilis. There is suggested an outline of treatment for early syphilis, the uniform application of which will markedly reduce the incidence of asymptomatic neurosyphilis, and probably, therefore, of clinical neurosyphilis.

Biochemistry of Tuberculosis.—In progressive tuberculosis, Long asserts, the rate of metabolism is increased, as a result of the operation of two factors, hyperthermia and the toxic effect of a foreign protein on protoplasm. As far as protein destruction is concerned, the second of these seems to be the more important, for hyperthermia per se does not increase nitrogen elimination in the normal subject. Yet it may well be that in the increased general metabolism induced directly by fever, the tissues become impoverished in those protein sparing constituents which serve to prevent protein destruction at similar temperature in health, and that protein may for this reason be drawn on to maintain the high level of total energy transformation. In less severe, afebrile tuberculosis such tissue destruction as does take place is probably the result of the action of some poison on the cells. In the chain of chemical factors involved in the progression of tuberculosis the tubercle bacillus is the first link, a wax armored micro-organism, maintaining itself in necrotic tissue, picking and choosing its nutriment from the heterogenous mass set before it, utilizing the glyceral of hydrolyzed fats, and probably building its wax therefrom, taking ammonia from certain of the amino acids produced in the digestion of dead protein, utilizing others directly to speed up the process of synthesis of its own protein, autolyzing to a slight extent, sufficiently to sensitize the surrounding host to its diffusible protein products, being carried by the lymph, by phagocytes or otherwise, to new soil, there to be met by a nonspecific foreign body response, which in the end operates to produce anemia and death of the isolated cells. Then there is the failure of that dead tissue to autolyze, perhaps because of ferment inhibiting substances within the bacillus, the phenomenon of caseation. Finally, there is more or less absorption of foreign protein from that focus, that of the bacillus itself and that of the distintegrating tissue, both toxic to the body protoplasm, both capable of causing fever and stimulating the metabolism of the host, so that in severe cases the typical picture of consumption ensues.

Changes in Omentum Caused by Mild Irritations.—In the study of the omentum during mild irritations by means of methods outlined by Cunningham, it has become entirely clear that the serosal lining cells and the fibroblasts react differently both as regards their morphologic appearance and the distribution of their vital dye content. The serosal lining cells increase in thickness and are much more compact than the normal, flat, platelike structures. They differ considerably in size and shape, being round, oval or square, and some of them have a few, fine pointed processes which vary in size but not in character. The vital dye content is more diffuse than in the normal cells, but there is never any dye to be seen in any of the fine processes. On the other hand, the fibroblast during irritation becomes an elaborately branched structure, forming a marked contrast to the compact serosal cell. The processes of the fibroblasts vary enormously in size and shape; some are long and slender, others branched into two or more subdivisions, and many have bulblike enlargements, especially where they branch. The vital dye is distributed throughout these processes, the granules often being collected in the bulb-like enlargements. It is thus obvious that during the course of a mild irritation the changes which take place in the mesothelial and fibroblastic elements indicate that they become even more widely separated from each other in their group characteristics. The cell bodies and processes of these two cell species are morphologically quite distinct in regard to size, shape and general characteristics. It seems entirely justifiable to conclude that such marked differences must denote some variation in the structure of the cytoplasm, and hence indicate some especial adaptation for certain definite physiologic activities. In addition to these morphologic criteria, it has been demonstrated that the vital dye content of the fibroblast and the mesothelial cell presents a sharp contrast.

Journal of Bacteriology, Baltimore

July, 1922, **7**, No. 4

Quantitative Determinations of Biochemical Changes Produced by Saprophytic Anaerobe. L. D. Bushnell, Lawrence, Kan.—p. 373.

Proportion of Viable Bacteria in Young Cultures with Especial Reference to Technic Employed in Counting. G. S. Wilson, London.—p. 405.

Method of Detecting Rennet Production by Bacteria. H. J. Conn, Geneva, N. Y.—p. 447.

Journal of Immunology, Baltimore

July, 1922, **7**, No. 4

*Serologic Study of Gonococcus Group. J. C. Torrey and G. T. Buckell, New York.—p. 305.

Studies on Acute Respiratory Infections. XI. Serologic Study of Alpha Streptococci from Upper Respiratory Tract. A. Goldman, New York.—p. 361.

Serology of Gonococcus Group.—An analysis made by Torrey and Buckell by agglutinin absorption methods of the serologic relationships of seventy-seven gonococcus strains, isolated from cases of acute and chronic gonorrhea and its complications, indicated that they may not be distributed among a number of clear-cut immunologic types. These gonococcus strains were representative of those occurring in widely separated geographic localities. Evidence is submitted which indicates the existence of a marked tendency to antigenic lability on the part of the gonococcus. Cross absorption experiments indicated clearly that no definite serologic distinction may be drawn between strains isolated from vulvovaginitis cases in children and those from gonorrheal in adults. A few representative strains with generalized relationships and good antigenic properties have been designated as suitable for use in a stock vaccine, and also for the preparation of a polyvalent antiserum. A marked degree of correspondence was noted between strain affinities as revealed by agglutinin absorption and complement fixation tests. Two strains of gonococcus have been seelcted, each of which covers a large part of the group, and which may be used to advantage in preparing an antigen for complement fixation diagnostic tests. It is also suggested that a second antigen, prepared from a number of selected irregular strains, be employed in conjunction with the one prepared from the two generalized strains.

Journal of Laboratory and Clinical Medicine, St. Louis

July, 1922, **7**, No. 10

*Studies in Focal Infection. R. N. De Niord and B. J. Bixby, Buffalo.—p. 573.
*Pharmacology of Benzyl Compounds. H. C. Nielsen and J. A. Higgins, Chicago.—p. 579.
Presence of Bacteria and Formed Elements in Urine of Rabbits. H. F. Helmholz and F. Millikin, Rochester, Minn.—p. 589.
*Etiology of Scarlet Fever. IV. Variation or Types of Alkali-Producing Organism in Scarlet Fever. R. W. Pryer, Detroit.—p. 592.
Possible Defensive Factors in Cancer of Rectum. W. C. MacCarty and J. K. W. Kehrer, Rochester, Minn.—p. 602.
Sociological Aspects of Heart Disease. S. Neuhof, New York.—p. 606.
*Rouleaux Formation of Red Cells in Various Types of Disease.' D. B. Swift, Boston.—p. 614.
Precipitin Test in Detection of Bacterium Diphtheriae. G. H. Smith and C. E. Kaufman, New Haven, Conn.—p. 619.
Micromethod for Nonprotein Nitrogen Using Two-Tenths of Cubic Centimeter of Blood. C. M. Wilhelmj, St. Louis.—p. 622.
Cellular Elements of Cerebrospinal Fluid. A. Levinson, Chicago.—p. 626.

Studies in Focal Infection.—The main fact to which DeNiord and Bixby direct attention is that infections, whether producing pus or not, give rise to a nuclear degeneration of a proteolytic type from the nuclei of the cells so broken down, the end product of which is uric acid. Uric acid is eliminated with some difficulty by the kidneys and consequently tends to accumulate in the blood when produced in larger quantities than normal over a period of time. Examination of the urine may thus for a long period of time show no more than the normal content of uric acid, while at the same time the blood chemistry reveals a uricacidemia, which is a diagnostic finding indicating a chronic infection somewhere in the body. The authors report that practice based on this assumption has been most happy in the result it yields. Among the cases treated the clinical diagnosis had been: erythema nodosum, sciatica, arthritis, corneal ulcer, beginning glaucoma, intercostal neuralgia, gout, chorea, neuritis, myalgia, neurasthenia, myocarditis, optic neuritis and secondary anemia. The uric acid in milligrams per cubic centimeter varied between 3.2 and 4.5. The treatment of the focal infection in most instances consisted in tooth extraction, with an additional appendectomy or tonsillectomy in some cases.

Pharmacology of Benzyl Compounds.—Observations made by Nielsen and Higgins suggest that the relaxing power of benzyl esters on the smooth muscle fibers of the intestine, as a rule, is dependent on the benzyl content and on the rate of hydrolysis of the benzyl compound. In all cases in which comparative records were obtained, with the exception of those of benzyl salicylate and benzyl acetylsalicylate, it was found that the higher the rate of hydrolysis the greater the efficiency. According to these findings, benzyl fumarate is more efficient than benzyl succinate, particularly with regard to initial action; the succinate is more efficient than the stearate, the acetate more powerful than the cinnamate, which in turn is of higher efficiency than the benzoate. The high relaxing power of benzyl salicylate and benzyl acetylsalicylate, in spite of their slow rate of benzyl hydrolysis, may be attributed to their intact molecules. These compounds differ from other benzyl esters in that their molecules contain hydroxl or substituted hydroxyl groups. The benzyl acetysalicylate is more efficient as an intestinal relaxant than the salicylate, in fact it is more powerful than any of the benzyl esters investigated. Various benzyl compounds other than benzyl esters, namely, benzyl phenolate, benzyl ethyl ether, and monobenzyl barbituric acid, as well as benzaldehyd, also possess smooth muscle relaxing properties.

Etiology of Scarlet Fever.—The organism previously reported on by Pryer as found only in scarlet fever, shows several varieties, one of which is, under certain conditions, somewhat similar in its morphology to *B. diphtheriae* and which may be a toxin producer. Diphtheria antitoxin protects against this culture, provided the antitoxin is given some time before the injection of the culture. A preliminary report is made of results obtained by cultivating material from patients sick with scarlet fever which it is believed justifies the tentative conclusion that this variable organism is the cause of scarlet fever.

Rouleaux Formation of Erythrocytes in Various Diseases.—In the study of rouleaux in disease, emphasis is placed by Swift on the necessity of a technic which permits quantitative measurements by varying the dilution of the serum and the cellular suspension. In seven out of seventeen cases of Hodgkin's disease rouleaux formation was completely lacking under conditions in which normal red cells formed intense rouleaux. In all the cases of leukemia examined, rouleaux formation was lacking to a greater or lesser degree. It was thought that this deficiency of the red cells from cases of Hodgkin's disease and leukemia might be due to the anemia which occurs in these diseases and that the change is not due to the anemia per se, is shown by the fact that the red cells of pernicious anemia formed rouleaux well. Normal rouleaux always occurred in the cases of cancer and sarcoma and in the cases of infectious disease that were tested. These results were clear cut. On the contrary, the results obtained in cases of leukemia and Hodgkin's disease were variable. It would seem that if there is any valuable information to be gained by testing for rouleaux formation, some finer development or adjustment of technic than that used must be established.

Lying-In Hospital of City of New York Bulletin

July, 1922, **12**, No. 2

*Management of Teeth During Pregnancy. W. N. Rowley, Rochester, Minn.—p. 82.
Certain Points in Management of Second Stage of Labor. R. McPherson, New York.—p. 87.
*Improved Maternity Care as a Public Health Question. G. W. Kosmak, New York.—p. 90.
*Hemorrhages in New-Born. J. R. Losee, New York.—p. 100.
*Cases of Pseudocyesis. M. Rosenstein, New York.—p. 107.
*Cerebral Hemorrhage in New-Born. J. R. Losee, New York.—p. 109.
Case of Typhoid Fever Complicating Pregnancy. M. Rosenstein, New York.—p. 114.

Management of Teeth During Pregnancy.—Rowley asserts that the removal of teeth with periapical infection and extensive caries can be done safely during pregnancy. Surgical removal in such cases is preferable in the presence of definite roentgenologic evidence of granuloma. Careful roentgen-ray examination, and interpretation and cooperation with the dentist, are highly essential. Surgical extractions in these cases should be done according to a definite plan, with a careful consideration of the number of teeth to be removed at one operation, the condition of the patient and her reaction following the first extraction. Repeated examination of the urine, temperature and leukocytes should be made, and general symptoms of reaction manifested by the patient should be observed carefully. Pyorrhea should not be overlooked and cavities in vital teeth should be filled with cement rather than with more permanent materials. In the presence of pathologic conditions associated with pregnancy, the same precautions must be taken as are observed in similar conditions existing independently of pregnancy. The eradication of foci of infection other than the teeth is equally important in the hygiene of pregnancy.

Maternity Care a Public Health Problem.—It is Kosmak's belief that improvement in obstetrics will result more rapidly and more directly from a recognition of the fact by the medical profession, by an improvement of teaching facilities in obstetrics, by an acknowledgment of this as one of the major branches of medicine and by a full realization of the fact that improved maternity and infant care are medical problems pure and simple with certain underlying economic factors, but a problem that must be kept free from all schemes for the endowment of motherhood, compulsory health insurance, or the subtle influences of the feminist movement.

Hemorrhage in New-Born.—Sixteen cases of hemorrhage of the new-born treated by blood transfusion are reported by Losee. Eight of these had been treated with normal human serum without any result and in one the hemorrhage recurred after blood transfusion. There are seven cases of subcutaneous hemorrhage, three of cerebral hemorrhage following operative delivery, three of hemorrhage from the umbilicus, two with gastro-intestinal hemorrhage and one from the wound following circumcision. Two of the babies with cerebral hemorrhage have been reported by their attending physician to be well one year after birth. No neurologic examination has been made in these cases.

Pseudocyesis.—From Nov. 1, 1916, to Nov. 1, 1917, ten cases of spurious pregnancy in patients whose ages have varied from 16 to 42 years were seen at the Lying-In Hospital. In eight amenorrhea had been present from three to ten months; in two there had been slight staining at the menstrual time; in all, the subjective signs were the distension of the breasts, the swelling of the abdomen with the sense of pressure in the lower portions, and paraesthesiae about the vulva. Of these ten, to a greater or less degree, in eight there had been the gastric disturbances with the nausea or vomiting in the early months. In two in whom the pregnancy, as judged by the cessation of the menstrual function, had apparently existed for less than four months, no quickening had been felt, while in the other eight, fetal movements had definitely been noted. Of these eight, two had, according to the calculations and to the surprise and fear of the patients, gone one month beyond term. Of the ten, in six there was a history of increase in weight during the period of amenorrhea varying from 10 to 35 pounds. On physical examination, in all but one case the existence of pregnancy, certainly to the period or anywhere near the period thought by the patient could at once be positively excluded. Abdominal palpation alone sufficed in most cases, especially when the patients claimed a pregnancy four months or more. In all cases a vaginal examination was made and showed no discoloration and no increase in size of the uterus, and no softening of the cervix. In no case was there any secretion in the breasts.

Cerebral Hemorrhage in New-Born.—Cerebral hemorrhage, Losee says, is a most constant necropsy finding in intra-uterine deaths and in infants' deaths during the first few days of life. Intra-uterine asphyxia, trauma and hemorrhagic disease in the new-born are the most common causes of this condition. The clinical picture of cerebral hemorrhage in the new-born is usually sufficient to establish a definite diagnosis. Lumbar puncture will determine the diagnosis sometimes in the doubtful cases but its value in draining blood from the entire subarachnoid space depends on certain conditions mentioned in the text. The success of the operation for decompression depends on the location and extent of the lesion.

Military Surgeon, Washington, D. C.

July, 1922, **51**, No. 1

Some Celebrated Marches During War. R. A. Foster.—p. 1.
Army Histopathologic Service. G. R. Callender and J. F. Coupal.—p. 6.
Post Library. P. M. Ashburn.—p. 13.
Medical Reserve Corps. C. E. Verdier.—p. 22.
Epidemiologic Study of Scarlet Fever and Its Control in Army Camps. E. B. Maynard.—p. 25.
Review of Eighteen Cases of Pulmonary Abscess. W. O. H. Prosser.—p. 37.
Plastic Repair Nasal Displacement and Deformity. R. H. Goldthwaite.—p. 42.
Mental Instability in Ex-Service Men—How Acquired; How Remedied. S. Wolfe, Salt Lake City, Utah.—p. 44.
Schedule of Ratings for Eye, Ear, Nose and Throat Disabilities in America, Great Britain, France, Italy, Belgium and Germany. H. V. Würdemann.—p. 47.
Plan for Conservation of Health of Males Within Second Decade of Life in Relation to Military Defense. W. S. Dow.—p. 74.
Children's Clinic at Fort Sam Houston, Texas. E. C. McCulloch.—p. 94.

Nebraska State Medical Journal, Norfolk

July, 1922, **7**, No. 7

Malignant Disease from Standpoint of Physician and with Particular Reference to Borderline Cases. G. Dock, St. Louis.—p. 221.
Review of Twenty-Three Cases of Pyloric Stenosis. J. A. Henske, Omaha.—p. 227.
Basal Metabolism: Its Clinical Value. G. W. Covey, Lincoln.—p. 231.
Sputum Borne Diseases in View of Lessons of World War. J. M. Banister, Omaha.—p. 238.
Intestinal Drainage in Intussusception. J. Buis, Pender.—p. 242.
Pneumoperitoneum as an Aid in Obstetrical and Gynecological Diagnosis. E. C. Sage, Omaha.—p. 244.

Oklahoma State Medical Association Journal, Muskogee

July, 1922, **15**, No. 7

Uterine Fibroids and Surgical Treatment. A. W. Pigford, Tulsa.—p. 215.
Cancers of Cervix. L. A. Turley, Oklahoma City.—p. 220.
Radiotherapy in Treatment of Uterine Bleeding. S. D. Neely, Muskogee.—p. 225.
Spinal Cord Tumors. A. D. Young, Oklahoma City.—p. 228.
Sarcoma of the Antrum: Report of a Case. H. S. Browne, Ponca City.—p. 230.

Porto Rico Medical Association Bulletin, San Juan

June 30, 1922, **16**, No. 137

*Relations Between Filariasis and Other Tropical Lymphopathies. R. Ruiz Arnau.—p. 95.
*Modern Treatment of Gonococcus Infection. Amalio Roldán.—p. 100.
Fracture of the Scapula. M. Guzmán Rodriguez, Jr.—p. 112.
Prophylaxis of Venereal Disease. V. Hernández Usera.—p. 114.
*Calculus in Male Urethra. Diego Biastoechea.—p. 118.

Disease of the Lymphatic System in the Tropics.—Ruiz Arnau has had many years of experience in hospital and private practice in the tropics, and has been impressed with the common factors, some of them latent, in certain tropical affections which present widely diverse clinical pictures. The lymphatic system, in particular, is an important factor, but it is not the lymph itself, but the walls of the lymphatics which are permanently relaxed from the relaxation of the muscular fibers contained within these walls. This insufficiency of the muscular fibers is the consequence of the continuous enervating influence of the hot climate. These relaxed muscular fibers stretch easily, especially under the influence of gravity during long standing, or of fatigue of the voluntary muscles, of sluggish circulation, and inadequate aspiration into the thorax—all of which we know affect the circulation in the lymphatic system. This sluggish functioning and ectasia, which might be called primary climatic lymphectasia, is a permanent condition in residents in the tropics and is slowly acquired by newcomers, but it gradually retrogresses on change to a cooler climate. It may persist latent all through life during residence in the tropics if the predisposing factors do not happen to rouse it. But it forms the substratum on which elephantiasis, etc., develop, and it explains the tendency to recurrence, with or without infection or parasitism. This conception of primary, pure lymphectasia explains the peculiar features of filariasis, especially its predilection for regions which suffer most from the action of gravity, allowing the easier penetration of the larvae and providing quieter foci for the multiplication of the parasite. These facts explain why persons do not contract filariasis in the tropics until they have been there some time.

Modern Orientations in Treatment of Gonococcus Infection.—Roldán recalls that he was the first in Spain to apply vaccine in treatment of gonococcus infection in women. This was in 1912, and his experience has been highly satisfactory with it since. He states that the apparent failures were always traceable to new infection except in the group of the gravest operative cases in which pains and secretion persisted, only slightly modified by the vaccine therapy. He extols diathermy as a powerful aid, and describes the indications and technic for both men and women. The best

results are generally realized with it in gonococcus adnexitis and metritis, acute and chronic. He adds that by perfecting the technic we may hope to be able to realize the complete cure of all gonococcus affections.

Calculus in Male Urethra.—The calculus impacted in the meatus was as large as a hen's egg. The man of 46 related that nine years before he had a sensation, while bathing in the river, as if something had escaped from the bladder, and since then there had been difficulty in micturition. The urine escaped through several fistulas above the impacted calculus. It weighed 55 gm. and was 2¼ inches long by 1½ wide. The communication is illustrated.

Southwestern Medicine, Phoenix, Ariz.

July, 1922, **6**, No. 7

State Medicine from Health Officers' Viewpoint. G. S. Luckett, Santa Fe, N. M.—p. 255.
Principles of Organized Medicine. A. L. Gustetter, Nogales, Ariz.—p. 258.
Operation of Election in Cholecystitis. C. Epler, Pueblo, Colo.—p. 270.
Instruction of Midwives in San Miguel County. L. Wills, Las Vegas, N. M.—p. 276.

Tennessee State Medical Association Journal, Nashville

July, 1922, **15**, No. 3

Reduction in Diarrhea and Enteritis. E. L. Bishop, Tenn.—p. 131.
Report of Two Unusual Cases; Double Ectopic Pregnancy with Foetuses at Full Term; Porro Cesarean Section Due to Distortion of the Uterus and Transverse Presentation. H. M. Tigert, Tenn.—p. 132.
The Treatment of Fibroid Tumors. C. N. Cowden, Tenn.—p. 135.
The Thymus Gland. K. M. Buck, Memphis, Tenn.—p. 144.
Report of Operations for Cancer of Stomach; Stone in Both Kidneys and Bladder; Gangrenous Appendicitis and Intussusception. W. D. Haggard, Nashville, Tenn.—p. 146.

Texas State Journal of Medicine, Ft. Worth

July, 1922, **18**, No. 3

Sequels of Epidemic Encephalitis. K. H. Beall, Fort Worth.—p. 157.
Case of Leukemia Cutis, and Treatment of Four Cases of Leukemia with Radium and Roentgen Ray. I. L. McGlasson, San Antonio.—p. 158.
Case of Leukemia. J. R. McKnight, and F. D. Francis, Fort Sam Houston.—p. 161.
Rabies and Pasteur Treatment. H. S. White, El Paso.—p. 163.
Endemic of Vincent's Angina Occurring Among College Students. J. M. Frazier Belton.—p. 166.
Malaria Control Problem of Texas. J. A. LePrince, Washington, D. C.—p. 168.
Case of Asthma Hypersensitive to Sheep Wool. I. S. Kahn, San Antonio.—p. 171.
Effects of Indelible Lead in Tissues. J. B. Thomas, Midland.—p. 171.

U. S. Naval Medical Bulletin, Washington, D. C.

July, 1922, **17**, No. 1

Sanitary Inspector of Community. W. H. Bell.—p. 7.
Acid-Base Equilibrium. C. W. O. Bunker.—p. 21.
Aviation Medicine in U. S. Navy. J. F. Neuberger.—p. 34.
Personal Hygiene of Aviators. C. M. Belli, Royal Italian Navy.—p. 39.
Gas Warfare: Adoption, Method of Use, Protection of Troops. W. R. Galwey, R. A. M. C.—p. 47.
Functions and Organization of Medical Corps Units Serving with Marine Corps in Field. S. N. Raynor.—p. 59.

West Virginia Medical Journal, Huntington

July, 1922, **17**, No. 1

Unsolved Problems of Preventive Medicine. A. Arkin, Morgantown.—p. 1.
State Problems. F. F. Farnsworth.—p. 11.
Milk and the Public Health. J. G. Townsend, Charleston.—p. 16.

Wisconsin Medical Journal, Milwaukee

July, 1922, **21**, No. 2

Preoperative and Postoperative Treatment and Care of Patients. J. V. R. Lyman, Eau Claire.—p. 45.
*Graded Thoracoplasty for Unilateral Bronchiectasis. C. A. Hedblom, Rochester, Minn.—p. 48.
End Results in Fractures. J. M. Dodd, Ashland.—p. 52.
Neurologic Manifestations of Pernicious Anemia. L. M. Warfield, Milwaukee.—p. 54.
Salient Points in Normal Labor. G. S. Jones, Milwaukee.—p. 57.
Differentiation of Hyperthyroidism and of Heart from Neurasthenic States. B. E. Hamilton and F. H. Lahey, Boston.—p. 59.

Graded Thoracoplasty for Unilateral Bronchiectasis.—The results detailed by Hedlom he believes justify extending the indications for thoracoplasty to include the earlier cases of milder grade and also those of advanced bronchiectasis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

July 20, 1922, **16**, No. 2

*Signs of Filarial Disease. B. Blacklock.—p. 107.
*Two Cases of Cardiac Aneurysm. A. Ingram and J. W. S. Macfie.—p. 119.
Cestodes in Collection of Indian Museum. T. Southwell.—p. 127.
Cryptocotyle Lingua (Creplin, 1825), Fischoeder, 1903, in a Dog in England. P. A. Maplestone.—p. 153.
Genital Armature of Female Mosquito. J. W. S. Macfie and A. Ingram.—p. 157.
Australian Cestodes. P. A. Maplestone and T. Southwell.—p. 189.
Incidence of a Disease in Population Groups, the Number of People in Which is Known or Unknown. J. W. W. Stephens.—p. 199.
Experimental Infestation of Physopsis Africana. F. G. Cawston.—p. 207.
Culicidae in Venezuela: Descriptions of New Species. A. M. Evans.—p. 213.
Ancylostomes Recorded from Sixty-Seven Postmortems Performed in Amazonas. R. M. Gordon.—p. 223.

Signs of Filarial Disease.—Two hundred and forty cases were examined by Blacklock with a view to establishing a correlation between "signs of filarial disease" and the occurrence of *Microfilaria bancrofti* in the blood. The figures obtained show that in this series many of the "signs of filarial disease" have no more correlation with the presence of microfilaria in the blood than has hernia; some have less.

Cardiac Aneurysm.—One of the cases cited by Ingram and Macfie was an aneurysm of the left auricle and the other of the anterior cusp of the mitral valve.

British Journal of Tuberculosis, London

July, 1922, **16**, No. 3

*Intensive Heliotherapy and Sea Bathing in Surgical Tuberculosis. H. Gauvain.—p. 105.
Application to Tuberculosis of Successful Treatment of Leprosy by Soluble Preparations of Chaulmoogra, Cod Liver Oil and Other Oils. L. Rogers.—p. 105.
Tuberculous Diseases Diploma (Wales) and What It Aims At. L. Cummins.—p. 115.
Additional or Reinfection Tuberculosis. E. R. Baldwin.—p. 120.
Emergency Instruction to Examining Physicians in Diagnosis of Pulmonary Tuberculosis. H. S. Cumming, Washington.—p. 125.

Heliotherapy and Sea Bathing in Surgical Tuberculosis.—The sea bathing practiced by Gauvain at Hayling Island, Hampshire, is carefully graduated. Ambulant patients first paddle for increasing periods, later are sprayed with cold sea water over increasing areas of the body, and finally full immersion is permitted. Recumbent patients are first progressively sprayed, later immersed as their condition permits and for carefully graduated periods. A brisk reaction is sought, and this is hastened by taking each patient from the sea, placing him within a wattle protected enclosure, where he is wiped down before the radiant heat of an open coke brazier. His feet are put in warm water and he is given a hot drink. Then follows a sun bath. The stimulating effect of this procedure is remarkable. Immersion is followed by deeper respirations of great amplitude which effectually expand the lungs and expel waste products. The circulation is profoundly modified. The first chilling effect causes contraction of the superficial capillaries, followed, when reaction occurs, by their dilatation. All parts of the body are, in phases, flushed by an increased volume of blood and lymph, the blood supply to diseased tissues likewise increasing. There is added excretion from lungs, kidneys and skin. Toxins are thus more freely eliminated and there is definite tissue change. Probably timed sea bathing, followed by brisk towelling and a graduated sun bath, produces a sense of exhilaration and well being which nothing else can convey. The effect is said to be striking and much greater than can be produced by sun treatment alone, especially in lupus.

British Medical Journal, London

July 22, 1922, **2**, No. 3212

*Aspects of Cardiac Disease. J. Hay.—p. 115.
Acute Arsenical Poisoning. W. H. Willcox.—p. 118.
*Blood Serum in Pernicious Anemia. E. M. Brockbank.—p. 124.
High Percentage of Abnormal Obstetric Cases in General Practice. J. W. Anderson.—p. 126.

Aspect of Cardiac Disease.—Irregular action of the heart, according to Hay, is not merely a matter of degree. The types differ fundamentally and their significance varies widely. The most important group is that of fibrillation of the auricle, characterized by a specific and fundamental change in the activity of the auricles, and a frequent and disorderly action of the ventricles. This increases the load of the heart and is the most common cause of cardiac failure. The recognition of this form of irregularity is not difficult, requiring only the fingers and a trained intelligence. Fibrillation is not confined to any one particular form of cardiac lesion, but may occur at any age, and when once established tends to persist. The digitalis group produces a remarkable slowing of the ventricular rate with consequent improvement in the patient. Auricular fibrillation can in 50 per cent. of the cases be terminated by quinidin sulphate, but in many patients the fibrillation recurs, and the exhibition of this drug is not without danger.

Blood Serum in Pernicious Anemia.—Brockbank states that the serum of pernicious anemia is always definitely yellow and that of all other anemias nearly colorless. The color may be seen in two or three drops of serum in a small glass bulb. Oxyhemoglobin absorption bands appear in the serum of the great majority of cases of pernicious anemia, and can easily be seen by a pocket spectroscope. They are not seen in the serum of other anemias. There may be some free oxyhemoglobin in the plasma of the circulating blood of the disease. It is possible, judging from the serum, that there are at least two varieties of the disease. Blood platelets are generally very scanty or absent, but when present are a sign of potential regeneration of red cells by the bone marrow and indicate a good temporary prognosis. The abnormal conditions of the red corpuscles suggest the possibility of pernicious anemia being a malignant disease of the blood.

Journal of Pathology and Bacteriology, Edinburgh

July, 1922, **25**, No. 3

Properties of Syphilitic Serums in Relation to Specificity of Immunity Reactions. J. Holker.—p. 281.
Opacity of Mixture of Serum and Wassermann "Antigen" in Progressively Increasing Concentrations of Sodium Chlorid. J. Holker.—p. 291.
Action of Dilute Acids in Blood Cultures. I. W. Hall.—p. 297.
*Histology of Case of Anapyhlactic Shock Occurring in a Man. H. R. Dean.—p. 305.
Effect of Electrolytes on Hemolysis. H. D. Wright and P. MacCallum.—p. 316.
*Influence of Anesthesia on Restoration of Volume of Blood After Hemorrhage and After Transfusion. A. E. Boycott and C. P. Jones.—p. 335.
Serologic Examination of One Hundred Strains of Gonococcus. W. J. Tulloch.—p. 346.
*Influence of Parathyroidectomy on Skeleton of Animals Normally Nourished, and on Rickets and Osteomalacia Produced by Deficient Diet. V. Korenchevsky.—p. 366.
*Sonne Dysentery Bacillus in Australia. S. W. Patterson and F. E. Williams.—p. 393.

Histology of Anaphylactic Shock.—Dean reports in detail his findings from the histologic examination of the tissue of a man who died in a state of shock induced by a shrapnel wound of the back and right shoulder. The patient, a soldier, aged 22, died of acute anaphylactic shock seventy minutes after a fourth injection of tetanus antitoxin. As far as it can be ascertained the patient had been perfectly healthy until the day of his death. All wounds had completely healed at the time of death. All four injections of horse serum were subcutaneous. The amount of serum injected on each occasion was presumably about 5 c.c. The intervals between the injections were five, sixteen and twelve days. No symptoms appear to have followed the earlier injections. The onset of symptoms was immediate, with cyanosis and vomiting. Death occurred in about seventy minutes and was apparently the result of a fall of blood pressure and cardiac failure. At the postmortem examination the liver weighed 62 ounces, had a deep purplish color and appeared to contain an excess of blood. Sections of the liver showed an extreme dilatation and engorgement of the sinusoids. The liver cells showed marked changes, which is of interest. The lungs showed an irregular dilatation of the capillaries. In places the alveoli were compressed, in places dilated. The tonsils were enlarged. There was an enlargement of the lymph glands of the neck, axillae, thorax, abdomen and of the inguinal regions. There was no trace of thymus tissue. The macroscopic and microscopic appearances of the liver were very similar to those described by Weil in acute anaphylactic death in dogs. It seems probable that in this man the primary and essential change was in the liver, and that a fall in blood pressure was the result of a dilatation of the capillaries of the liver. The capillaries of the liver, lungs, small vessels of the heart, stomach, pancreas and spleen contained enormous numbers of leukocytes. Twelve per cent. of the leukocytes in the capillaries of the liver were polymorphonuclear eosinophils. The observations made in this case support Weil's belief that dilatation of the hepatic capillaries is an important factor in the anaphylactic state in man.

Influence of Anesthesia on Restoration of Blood Volume.—Under anesthesia the restoration of the blood volume after hemorrhage is slower and less complete than in nonanesthetized rabbits. This is attributed by Boycott and Jones to a diminution in the permeability of the capillary wall to liquid passing from the tissue fluid to the blood.

Influence of Parathyroidectomy on Skeleton.—Korenchevsky's results agree in the main with those of Jovane and Vaglio, Hohlbaum, Reuss and Leopold. He has not so far been able to confirm those of Erdheim on the rickets producing effect of removal of the parathyroids. It would appear that the parathyroidectomy produces no marked influence on the skeleton of rats kept on normal or rickets producing diets, corroborating the view that there is no essential distinction between rickets and osteomalacia, the only modifying influence being age.

Sonne Dysentery Bacillus.—The characters of a group of bacilli corresponding to the dysentery bacillus of Sonne, isolated from cases of dysentery in Australia, are described by Patterson and Williams.

Journal of Tropical Medicine and Hygiene, London

June 15, 1922, **25**, No. 12

Epidemiology and Administration. W. G. Armstrong.—p. 45.
Appreciation of Patrick Manson. F. Mott.—p. 162.
Appreciation of Patrick Manson as a Bacteriologist. R. T. Hewlett.—p. 163.
Appreciation of Patrick Manson as a Dermatologist. J. M. H. Macleod.—p. 163.
Manson's Part in Helminthologic Discovery. H. A. Baylis.—p. 164.
Carriers of Filaria Bancrofti. F. W. Edwards.—p. 168.
Acclimatization and Sunstroke. G. Giglioli.—p. 185.
Synopsis of Family Linguatulidae. L. W. Sambon.—p. 188.

July 1, 1922, **25**, No. 13

*Dangers of Rapid Intravenous Injection of Concentrated Solutions of Quinin Bihydrochlorid. U. N. Brahmachari.—p. 209.
*Perforation of Ileum Probably Caused by Ascaris Lumbricoides. A. Ingram.—p. 211.
*Blackwater Fever in Paqua. W. E. Giblin.—p. 212.

Intravenous Injection of Quinin Bihydrochlorid.—In Brahmachari's opinion, the amount of quinin injected into a vein at the bend of the elbow should not be more than 1/20 grain per second or 1/2 grain per minute. This will mean that 10 grains will take twenty minutes for completion of the injection. Using a dilution of 1:300, this will mean that 10 c.c. will take one minute for injection, and the total amount of fluid injected will be 200 c.c. Injection of fluid beyond this limit into a patient whose blood pressure is very low is likely to cause pulmonary edema, which may prove very serious in certain cases of pernicious malaria. A dilution less than that may make it very difficult to inject at the rate of 1/20 grain quinin per second. The rate of injection should be still slower in the case of children. Brahmachari suggests that 5 grains should be injected in patients below 15 years of age in twenty minutes, which is half the rate in the case of an adult.

Perforation of Ileum by Ascaris.—In the case cited by Ingram death was due to peritonitis following perforation of the intestine occurring in a case of typhoid, this perforation most probably being caused by an *Ascaris lumbricoides* pushing through a weakened part of the intestinal wall.

Blackwater Fever and Malaria.—Giblin states that malaria is an essential contributing cause in the production of the

hemolytic factor which has still to be demonstrated. It is impossible to define blackwater fever with any definite precision as it is not a specific disease, but rather a symptom complex; in fact, a complication of malaria. To adequately treat the malarial factor will prevent the appearance of blackwater fever.

Lancet, London

July 22, 1922, **2**, No. 5160

Transatlantic Development of Rhinolaryngology. H. S. Birkett, Montreal.—p. 159.
*Cancer of Larynx: Operation of Laryngofissure and Results in Intrinsic Variety. St. C. Thomson.—p. 163.
*Chronic Appendicitis and Recurrent Abdominal Pain. W. H. Battle.—p. 165.
Retention of Urine in Elderly Men. J. S. Joly.—p. 170.
*Periarterial Injection of Alcohol in Treatment of Senile Gangrene. W. S. Handley.—p. 173.
Dangers of Rapid Intravenous Injection of Quinin Solution. U. N. Brahmachari.—p. 175.
Significance of Erythromelalgia in Cases of Intermittent Claudication of Lower Extremities. F. P. Weber.—p. 176.
*Cerebral Abscess Complicating Bronchiectasis. C. de W. Gibb.—p. 177.
*Administration of Thyroid Gland in Hydrocephalus. J. P. Gray.—p. 177.

Laryngofissure for Cancer of Larynx.—Twenty-one years' experience with the operation of laryngofissure has convinced Thomson that if cancer is limited to a vocal cord and is operated on with every care laryngofissure is safe in execution and certain in its results. The operative death rate should be nil, a serviceable voice can be promised, and there is every prospect of permanent freedom from recurrence.

Chronic Appendicitis and Recurrent Abdominal Pain.—In all painful conditions of the abdomen for which relief is sought Battle says it is advisable to think of the appendix as a possible cause, for the large proportion of them are dependent on disease of that part of the intestinal canal. The essential points in the differential diagnosis between this and other conditions are reviewed.

Periarterial Injection of Alcohol for Senile Gangrene.—Two cases are cited by Handley to illustrate a new method free from some of the objections attendant on the operation of sympathectomy introduced by Leriche. In sympathectomy local contraction of the artery occurs and a period of very low circulation, lasting up to fifteen hours, precedes the onset of vasodilator symptoms. The vasodilator symptoms, when they supervene, last only three or four weeks. It is obvious that an initial extreme vasoconstriction lasting possibly as long as fifteen hours may be very dangerous in gangrene or threatened gangrene, and that the period of vasodilatation secured—three or four weeks only—is all too short for the accomplishment of such a great work as the separation of the toes or of a portion of the foot. In periarterial alcohol injection there is no initial period of diminished circulation; the vaso dilator results aimed at by the operation are produced at once, without any temporary aggravation of the condition which the operation is intended to cure. No local contraction of the artery occurs at the site of the injection. In a case of senile gangrene of the foot Handley exposed the right femoral artery in Hunter's canal, divided its sheath, and with a very fine hypodermic needle, obliquely introduced into the tunica adventitia, injected about 4 minims of rectified spirit at each of four equidistant points around its circumference. No pulsation could be felt in the artery, even when exposed. No local change in the caliber of the artery followed the injection, but where the alcohol was injected a whitish, ill-defined, opaque band appeared around the vessel.

Cerebral Abscess Complicating Bronchiectasis.—In Gibb's case the abscess remained latent producing no symptoms referable to the brain until excited to activity by a fall on the head. There was no evidence of a gross head injury sufficient to account for the symptoms, and it was thought that possibly the active development of some cerebral condition made the man giddy and caused him to fall. Headache and slow pulse suggested cerebral tumor, gumma, or abscess, but the absence of optic neuritis was against these. The only localizing symptom consisted in the late development of left arm and left leg paralysis. Slight bleeding from the nose, stated to have occurred immediately on receipt of the injury, indicated the possibility of a fractured base, but there was no further bleeding. The possibility of a lung infection becoming generalized and attaching the cranium was considered. An abscess about the size of a large walnut was found in the right temporosphenoidal lobe. It consisted of a thick capsule containing greenish-yellow pus. From its size and the thickness of its wall the abscess was judged to be of long standing. Signs of fractured skull or of middle-ear disease were absent. There were several large bronchiectatic cavities in the lower lobe of the right lung. There were areas of bronchopneumonia in the lower lobe of the left lung. The trachea and bronchi were full of pus. The pus from the cerebral abscess on cultivation gave a growth of Friedlander's pneumobacilli.

Thyroid Gland Treatment of Hydrocephalus.—Gray reports a case of hydrocephalus completely cured by thyroid feeding, 1 grain daily by mouth.

Sei-I-Kwai Medical Journal, Tokyo, Japan

June, 1922, **41**, No. 463

*Physiologic Study of Yoga. S. Uramoto.—p. 1.

Blood Pressure and Respiration During Yoga.—Yoga or other similar religious abstract meditation is usually adopted as the method for religious mental training by Buddhists of the Sen sect (Dhyana) and by the Hindus. With the former, the bodily conditions of yoga are somewhat definite, while the mental conditions are somewhat various. In most cases, however, attention is concentrated on a question set for meditation. The mental and physical conditions can be considered as a special case of hypnotism, perhaps even as a state of autosuggestion, because in this case, the mental state can change positively, which change is not possible in entirely negative mental conditions of pure hypnotism. Uramoto endeavored to investigate the changes of blood pressure and rate of respiration during yoga. He made his observations on a priest of Dhyana, 38 years of age, who had spent the twenty years of his religious life in the Sen sect of Buddhism. The pulse curve and respiratory movements became lower during the yoga, but not slower or irregular. The curve always recovered its original height several minutes after the subject awakened. Uramoto is convinced that these changes are the symptoms of restrained functions, which from the point of view of psychophysical parallelism are physical conditions reacted on by mental conditions. In certain cases the pulse curve becomes suddenly lower even to an almost straight line. This may be a symptom of the sudden entrance into trance, which can only be performed by long practice. Then, again, the respiratory movements become irregular in depth, without any change in the pulse. Such symptom may occur in disturbed meditation owing to unfavorable mental and physical conditions. In this experiment, there was no such remarkable change in the respiratory functions as Imai observed in his experiment when the respiratory sounds were hardly audible through the stethoscope.

South African Medical Record, Cape Town

June 10, 1922, **20**, No. 11

Antibodies and Immunity. J. Pratt-Johnson.
Case of Choleraic Diarrhea of Streptococcal Origin. C. Lundie.—p. 209.
*Treatment of Epilepsy by Snake Venom. W. Russell.—p. 209.

Treatment of Epilepsy by Snake Venom.—Ten cases of idiopathic epilepsy were selected by Russell at random, cases in which the epileptic seizures were not attributable to any definite organic cause, for treatment with a mixture of the venom of the cobra and puff adder. The number of fits per week was obtained in each case for the twenty-six weeks previous to the commencement of treatment. Treatment was begun during September, 1921. In each case 0.0015 c.c. liquid venom, in 2 c.c. of distilled water, was injected into the deltoid muscle. The injections were repeated at intervals of seven days, for seven weeks, the dose being gradually increased to 0.01 c.c. liquid venom. Owing to a delay in obtaining further supplies of venom, an interval of six weeks elapsed before treatment could be continued. No further injections were given to three female patients on account of their extreme unwillingness to undergo the pain and discom-

fort associated with the injections. Treatment was, therefore, continued in the seven male cases only, gradually increasing doses being given at weekly intervals for eleven weeks, until a dose of 0.025 c.c. liquid venom had been reached. In each case a record of fits was kept while venom was being given, and for six weeks after the last injection. In two cases a slight decrease took place in the average number of fits per week. In one case only one fit was seen in the six months of treatment. In the remaining seven cases a definite increase in the number of fits occurred. One patient developed status epilepticus five weeks after the cessation of the injections, and died.

Annales des Maladies Vénériennes, Paris

July, 1922, **17**, No. 7

*Arsphenamins and Hemoclastic Crisis. J. Golay and Benveniste.—p. 481.
*Reinfection with Syphilis. Carle.—p. 497.
Syphilis in Northern Africa. G. Lacapère.—p. 493. Cont'n.
Syphilitic Gangrene of Penis. E. Orphanidès.—p. 516.
Plastic Induration of Corpus Cavernosum. Montpellier et al.—p. 523.
Bismuth in Treatment of Neurosyphilis. Evrard.—p. 525.

Action of Arsphenamin on the Blood.—Golay applied the test for hemoclasis in twenty patients under arsphenamin treatment. In 65 per cent. there was not the slightest sign of any shock action from the drug. In 20 per cent. the blood pressure dropped; in 5 per cent. there was transient leukopenia, and in 5 per cent. both drop in pressure and leukopenia. The complete hemoclastic crisis was never encountered in the group.

Reinfection with Syphilis.—Carle discusses the conditions under which reinfection can occur. It is becoming more and more frequent every day. He published in 1921 a case of unequivocal reinfection after treatment with mercury alone, and as early as 1901 he had observed a number of cases of reinfection. He here describes two new instances, and reiterates that the biologic laws are not mathematical laws; their equations contain imponderables which we are unable to seize. We have all seen secondary phenomena develop six months after the most thorough treatment, and, on the other hand, have seen a new primary chancre develop after most inadequate treatment. We need not despair of the future of the patient even if he has been dilatory in applying for treatment, and we must not discard the idea of a reinfection because we know of the thorough treatment. Another fact brought out by this study of reinfections is that many instances of reinfection must have escaped recognition in the past. In both the cases reported here, the old syphilitics considered themselves safe from new infection. He advises warning against the danger of reinfection, especially when the man is married, to protect the wife.

Annales de Médecine, Paris

May, 1922, **11**, No. 5

*The Wassermann Test in Spinal Fluid. Cestan and Riser.—p. 365.
*Cardiorenal Dyspnea. F. Bezançon et al.—p. 386.
*White Dermography. A. Sézary.—p. 403.
Intercostal Neurofibromatosis. Souques et al.—p. 416.
*The Plague. E. Joltrain and L. de Gennes.—p. 424.
*The Schick Reaction. P. F. Armand-Delille.—p. 435.

Quantitative Wassermann Test.—Cestan and Riser compared the intensity of the Wassermann reaction in the spinal fluid in eighty-two cases of general paresis or meningitis, tabes or cerebral arteritis on repeated application of the test to the spinal fluid. In all of these the Wassermann reaction was sometimes very pronounced, so that it is impossible to base the differential diagnosis of syphilitic disease of the nervous system on the intensity of the response to the test.

The Dyspnea with Heart plus Kidney Disease.—Examination of respiratory organs, heart and kidneys in cases of paroxysmal dyspnea classifies it as (1) acute pulmonary edema, which is exceedingly rare; (2) congestion, with edema at the base, which is very common; (3) acute exacerbation of infectious processes in the bronchi and alveoli with sclerosis of the lungs and impending insufficiency of the right heart; (4) cardiorenal asthma. In the latter group there is always a history of infections and intoxications damaging the cardio-arterial and renal system. Syphilis takes the lead here. There is also a "pulmonary past," and a recent seasonal infection. The sclerosis in the lungs, the old bronchitis, or the tendency to emphysema is the irritating thorn inducing a focus of lesser resistance in this cardiorenal asthma, the same as in true asthma. This thorn localizes the reaction to the colloidoclastic shock in the respiratory tract, instead of the skin or nervous system being the predisposed soil as when urticaria or migraine develop. In treatment of cardiorenal asthma, venesection is the one remarkably effectual remedy; it should be abundant, and there should be no hesitation in repeating it. It should be supplemented with absolute repose, an energetic purge and restriction to "lactosed water" alone, followed by a milk diet, keeping the ration low. After the attack is over, means to reduce the blood pressure, with theobromin and restriction of salt, should be supplemented with stimulants for the heart at the slightest sign of failing compensation. Iodid, datura and belladonna have little if any action in true cardiorenal asthma, but epinephrin has a decided sedative action in the paroxysm of suffocation. It should always be followed by venesection which is the sovereign remedy for asthma from heart disease.

White Dermography.—Sézary concludes from analysis of the so-called suprarenal white line in 500 subjects that it is a physiologic phenomenon, and has nothing to do with insufficiency of the suprarenals. The variability in different persons depends merely on the tonus of the smooth muscle fibers at the moment.

Bubonic Plague.—This study of the cases of plague observed at Paris in June, 1920, and since says that although the epidemic seems to be extinct, yet isolated cases are still being encountered. The antiserum is more effectual the earlier it is given. The doses should be large and given by the vein. Joltrain and de Gennes reiterate that the plague once imported into a locality never disappears again completely. Vaccination is the most effectual means of prophylaxis. Two injections at five or eight days' interval usually immunize an infant completely for from six months to a year, even in the midst of an epidemic. "Otherwise" they add, "the prophylaxis of plague encounters often insurmountable obstacles. The declaration of cases of plague is a matter that goes beyond the medical domain, and may become an important question of international policy. The most essential element is the destruction of the rats, but this is easier to order than to carry out."

The Schick Reaction.—Armand-Delille endorses the value of the Schick reaction in the fight against diphtheria, and advises following the example of the Americans in respect to utilizing it as a guide for immunizing both children and adults. In conclusion, he says, "I cannot cite the extensive bibliography on the subject. The Quarterly Cumulative Index, published by the American Medical Association, can be consulted for this. . . ."

Archives Franco-Belges de Chirurgie, Brussels

March, 1922, **25**, No. 6

*Colectomy for Megacolon. L. Sencert and R. Simon.—p. 493.
Congenital Megacolon. P. Woringer.—p. 502.
*To Insure Continence of Artificial Anus. A. Jentzer.—p. 505.
*Perforation of Gastroduodenal Ulcers. L. Courty.—p. 508.
*Diverticulum in Esophagus. L. van den Wildenberg.—p. 526.
Pyocyaneus Vaccine Treatment. Favreul and Fortineau.—p. 543.
*Traumatic Epilepsy. Marquis and Roger.—p. 560.
*Spinal Anesthesia. Caraven.—p. 567.
Strangulated Diaphragmatic Hernia. Le Jemtel.—p. 570.
Polyadenomatosis of Large Intestine. Gruget.—p. 573.

Colectomy for Megacolon.—The man of 54 and the woman of 38 were both cured of all disturbances by the operation.

To Insure Continence with Artificial Anus.—Jentzer emphasizes the functional adaptation which transforms the colostomy in time into a continent, sphincter-like opening. The microscope in a case described revealed the hypertrophy of the different layers forming the artificial anus, which had been perfectly continent for five years. He suggests that this hypertrophy might be accelerated and intensified by electric treatment. The abdominal muscles, under the influence of the electricity, act like a curtain to close the opening, while the smooth muscle of the intestine can be felt contract-

ing around the finger. Systematic electric treatment would thus have a tendency to hasten the functional adaptation of the new anus.

Perforation of Gastroduodenal Ulcers.—Courty bases the diagnosis on the sudden atrocious pain, shock, the stiffening of the abdominal wall, and a history of dyspeptic disturbances, almost regardless of the location of the pain. The maximum may not be felt in the epigastrium, and the pain may spread to the right iliac fossa. It is then often mistaken for appendicitis. Success depends on the promptness of the intervention; the literature shows 90 per cent. cured when the operation followed within eight hours, before peritonitis had become installed.

Diverticula in Pharynx and Esophagus.—In seven cases Wildenberg fastened the tip of the very large diverticulum higher than its mouth, thus emptying the bag of its contents and preventing its filling up again. This alone sufficed to cure in four cases. In three others the diverticulum was excised later. One patient was a man of 56 who had had disturbance from this cause for twenty-one years. The diverticulum was the largest on record, Wildenberg says, but the man was completely cured by turning the base upward and suturing it under the skin in the neck, with excision three months later. By this time the man's weight had increased from 58 to 78 kg. The article is profusely illustrated.

Indications for Operative Treatment of Traumatic Epilepsy.—Marquis and Roger remark that all agree on the necessity for operative intervention when there is a subdural hematoma, a superficial foreign body, or a bone growth or plate pressing on the brain. They warn against operating when the foreign body is deep in the brain. Relief may be obtained by lumbar puncture or application of ice to the head. Iodid ionization to act on the sclerosis, and calcium to soothe the nervous system may be useful adjuvants.

Spinal Anesthesia.—Caraven has injected procain plus caffein in sixty cases for intraspinal anesthesia and states that the by-effects were numerous although he never had a serious mishap. The drop in arterial pressure was constant.

Bulletin de l'Académie de Médecine, Paris

June 13, 1922, **87**, No. 24

*Uterine Fibromas. Témoin.—p. 636.
*Radiotherapy of Hay Fever. Barcat and Balzer.—p. 642.
*Diuresis in Failing Compensation. G. Etienne and M. Verain.—p. 646.
*The Individual Health Card. O. Laurent.—p. 649.
The Thoracic Duct in Filariasis. L. Nattan-Larrier.—p. 651.
Epithelioma in a Goiter. A. Pettit.—p. 654.
Auscultation Symptom of Hydatid Cyst in Liver. Chavannaz.—p. 656.
Bismuth in Treatment of Syphilis. H. Grenet et al.—p. 658.

Uterine Fibromas.—Témoin has made a practice since before 1896 of enucleating fibromas instead of removing the fibromatous uterus unless the organ was so pathologic that gestation was out of the question. The results have always been extremely satisfactory, and childbearing later has not been interfered with. In four of five cases the fibroma was enucleated without interfering with the existing pregnancy.

Radiotherapy of Hay-Fever.—Barcat reports excellent results in ten cases of hay-fever in which he applied very small doses of the radium or roentgen rays to the eyes and nasal mucosa once a week. The symptoms all subsided in a few days up to three weeks, and some of the patients had no recurrence during the succeeding hay-fever seasons. The others have had only much attenuated and less numerous attacks. His first three cases date from 1913.

Diuresis in Failing Compensation.—Etienne and Verain call attention to the way in which the kidneys work extra hard when the heart begins to fail. This compensating hyperfunctioning of the kidneys at the beginning of failing compensation in cardiovascular functioning is reflected in the Ambard constant before the change in conditions can be detected in any other way. In fifty-nine afebrile cases in which the Ambard constant was below 0.070, there was heart disease in thirty-seven. In five of the cases it was even below 0.040. Only sound kidneys can do this extra work and as soon as the kidneys show signs of failing, the Ambard constant rises.

The Individual Health Card.—Laurent urges the organization of what, he says, might be called the Institut de la Prévoyance Médicale, for periodical medical examination of the well after 40. His plan includes regional centers, an annual fee, and an individual card record. It would amount in time to a vast practical medical encyclopedia, he says, along the lines of the Life Extension Institute in the United States.

June 20, 1922, **87**, No. 25

Uterine Fibromas. Bécère.—p. 664.
*Prehistoric Splint for Fractured Forearm. Peyneau.—p. 668.
Prophylaxis of Malta Fever. H. Vincent.—p. 672.
*Resection of Nerves of Stomach. A. Latarjet.—p. 681.
Transfusion of Blood. V. Pauchet.—p. 692.
*Passage of Nematodes Through Skin. Neveu-Lemaire.—p. 697.

Prehistoric Splint.—The baked clay apparatus was found in a collection of prehistoric articles belonging to the first iron age, found in southern France. It is 15 cm. long by 5 wide and 5 high, and bears the perfect imprint of the forearm and hand as if it were a splint for immobilization of the fractured right arm.

Resection of Stomach Nerves.—Latarjet's experiments on dogs apparently confirmed that the nerves of the stomach can be totally or partially resected without harm, and that this reduces the tonus and the force of the peristalsis and also the amount of hydrochloric acid secreted. It took seven hours for the evacuation of the stomach after the denervation, when two hours sufficed before. On the basis of these data he resected the nerves of the stomach in 6 cases of tabetic gastric crises; in 6 of gastric or duodenal ulcers and in 10 of stomach disturbances without apparent lesions. He supplemented the denervation with a gastro-enterostomy in some of the total 24 cases. In the 6 tabetic cases the pains and vomiting were much improved in 2 cases; in another patient no effect was apparent; in another there was improvement, but only temporary. The fifth patient was completely cured; there has been no return of the gastric crises during the six months since. The cure was complete also in the sixth case; to date both the gastric crises and the morphin addiction are apparently cured. The 6 gastric ulcer patients all consider themselves cured; the denervation had been supplemented with gastro-enterostomy. In the 10 cases of stomach disturbances without apparent lesions, one woman was cured by the denervation of pains in the stomach and vomiting, after years of suffering. No benefit had followed appendicectomy and fixation of the kidney, but there has been no return of the stomach symptoms since the denervation. The success is equally striking in a man of 53 with pains in the stomach for twenty years. In 2 other cases the condition had not been improved by a gastro-enterostomy, but the denervation one and six years later banished the pains. In 4 others a gastro-enterostomy was done at the same time as the nerves were resected, and the cure was prompt and immediate. Another one in this group was cured but soon succumbed to an intercurrent infectious disease. The tenth patient in this group was tuberculous and had intense gastralgia. No benefit was derived from the denervation, nor from a gastro-enterostomy later. Only one or two in the total 24 patients were mentally abnormal. The nerves of the stomach, he says, are arranged in three pedicles, and he resects each one, as he explains.

Penetration of Nematodes Through the Skin.—Neveu-Lemaire refers to recent research which has confirmed the passage through the skin of the larvae of ten nematode parasites of animals besides those of man. It has also been established that these parasites of animals may get into the skin of man and induce a skin affection although they die off before they invade other tissue. This "ground itch" may occur in animals, likewise, from human parasites entering the skin, although they do not survive to infest other tissues.

Bulletin Médical, Paris

July 1, 1922, **36**, No. 27

Vagosympathetic Hemoclasis and Dystonia. G. Drouet.—p. 549.
Indications for Ouabain. E. Desesquelle.—p. 550.

July 8, 1922, **36**, No. 28

The Contemporaneous Evolution of Surgery. Forgue.—p. 563.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 2, 1922, **46**, No. 19

*Bleeding Time Under Arsphenamin. A. Sézary.—p. 862.
*Autovaccine Therapy of Gonococcemia. J. Tapie and M. Riser.—p. 863.
*Anaphylaxis to Mercury. Gougerot and Blamoutier.—pp. 868 and 873.
Ulcer in Ileum in Pneumonia with Uremia. Lemierre and Lévesque.—p. 877.
*Antibodies in Tuberculosis. P. Armand-Delille et al.—p. 883.
*Splenopneumonia Reaction. P. F. Armand-Delille et al.—p. 886.
Myopthy with Inherited Syphilis. G. Milian and Lelong.—p. 893.

Change in Bleeding Time Under Arsphenamin.—Sézary noticed in three cases that the bleeding time became prolonged under the influence of a French arsphenamin. One of these patients was not seen again, but both of the other two soon developed symptoms showing progressive intolerance of the drug. The tendency to hemorrhage evidenced by the lengthening of the bleeding time suggests injury of the liver from the medication, and warns of toxic complications.

Gonococcus Septicemia.—The intermittent fever persisted during ten months, unmodified by treatment with colloidal metals, antimeningococcus serum, autohemotherapy and quinine. But it was arrested at once with an autogenous vaccine. The robust man of 35 had never presented any skin or joint or viscera complications, and the diplococcus found in the blood could not be cultivated, but the first onset of the fever had been during the decline of acute gonorrhea with orchitis. Bloch and Sergent have each reported a similar cure in a case of meningococcus sepsis and gonococcus sepsis. The autogenous vaccine may induce a curative shock without specific action.

Mercurial Erythrodermia.—The intense desquamating eruption in the man of 67 developed on resuming mercurial treatment by the mouth after seven years' suspension. He had never displayed any intolerance for mercury during the previous courses of mercurial treatment. The symptoms of the anaphylaxis to mercury developed after a very small amount of mercury had been taken. The pruritus became evident the third day, and the eruption the fifth. The tenth day it became intense, but there were none of the usual symptoms of mercurial poisoning. The liver was large and tender, with urobilinuria, alimentary glycosuria and the hemoclastic crisis. The eruption could be induced and banished at will by giving a little mercury by the mouth. Gougerot and Blamoutier had no opportunity to attempt desensitization, but they accomplished this in a case of erythrodermia from intolerance to arsphenamin, giving the drug in small doses by the mouth at first and then subcutaneously.

Anaphylaxis to Mercury.—Gougerot and Blamoutier ascribe to the mercury that was being applied to the scalp, or as a mouth wash, or by subcutaneous injections, the severe dermatitis, edema of the skin and mucous membranes, and diarrhea with hemorrhage observed in a number of cases described. In other cases there were severe local reactions to the injections of mercury. All such cases seem to offer a prospect of successful desensitization whether the disturbances occurred on first taking the drug (idiosyncrasy) or the intolerance had developed later (anaphylaxis). The question now is, Will a preliminary small dose protect against them? Certain recent experiences seem to indicate this.

Antibodies in Tuberculous Serum.—Repeated examination of 177 tuberculous subjects showed that the antibody content of the blood serum fluctuated at times without known cause. It is no criterion for the diagnosis or prognosis. This statement by Armand-Delille is corroborated by Rist.

Splenopneumonia Reactions in Children.—Massive condensation of part or all of the lung, with the lung casting a total shadow, was observed in a number of children. Three typical cases are described. It proved impossible to induce pneumothorax. Comby remarked in connection with these cases that although a tuberculous origin seems unmistakable, the prognosis is not grave. The children recover in time without even bronchiectasia. A pneumothorax can do only harm, and the attempt always fails.

Journal de Médecine de Lyon

July 5, 1922, **3**, No. 60

Acute Infectious Edema of the Larynx. J. Garel and A. Gignoux.—p. 381.
Delirium and Psychoses in Infectious Diseases. A. Porot.—p. 391.
Sympathecotomy and Vagotony. A. Mazeran.—p. 399.

Journal de Radiologie, Paris

June, 1922, **6**, No. 6

Radiography of the Base of the Skull. E. J. Hirtz.—p. 253.
Deep Radiotherapy. Nadaud.—p. 264. Cont'n.
Action of Galvanic Current on Healthy and Diseased Tissues. Chalhiol and Laquerrière.—p. 271.
Radiography in Dentistry. H. J. Harwood and A. Comte.—p. 276.
*Supradiaphragmatic Inversion of Stomach. Brun et al.—p. 278.
Multilocular Cyst in Tibia. Yvernault.—p. 281.
Bilateral Fracture of Humerus. Ravanier and Laquerrière.—p. 283.
Iodid of Potassium Ionization in Furunculosis. Laquerrière.—p. 284.

Congenital Supradiaphragmatic Inversion of Stomach.—In the case reported by Brun and his co-workers radiography showed that the stomach of the child of 11 was entirely above the right diaphragm. The small intestine, except at its proximal extremity, the cecum and colon were in a normal position. The case is interesting from the standpoint of radiographic diagnosis as the difficulty was in ascertaining if the stomach was above or under the diaphragm. The diagnosis was confirmed by the Trendelenburg position.

Journal d'Urologie, Paris

April, 1922, **13**, No. 4

*Bilateral Polycystic Kidney. G. Marion.—p. 241.
*Rectum Opening in Bladder. V. Cristol.—p. 243.
*Urethroperineal Urine Fistulas. Fonseca.—p. 249.
Balanic Urine Abscess. Reynard and Juvin.—p. 259.
Bar in Bladder Masking Right Meatus. R. H. Kummer.—p. 263.

Bilateral Polycystic Kidneys.—Marion peels off the surface of the kidney by cutting with scissors the protruding wall of the superficial cysts. The capsule is too closely adherent in these cases for decapsulation. He has applied this *pelage* in three cases and with the best results. It relieved the intense pains completely, and one of the patients returned three years later, asking to have the same operation done on the other kidney, as this second kidney was now causing pain. The woman succumbed to postoperative pneumonia after this second operation. Another woman has been under observation for fourteen years. The pains in the right kidney were cured completely in 1908 by this operation. Four years later the left kidney required it, and the cure was complete for nine years. Then the pains returned in the left kidney, and the patient asked for operative relief anew. This kidney is very large. Conditions have improved under repose, and he has deferred operating. Functional tests show little change in the work of the kidneys during the last ten years, with satisfactory output of urea and chlorids. In his third case the decortication cured the hematuria for which the operation was done.

Rectum Opening in Bladder.—Cristol reports the case of a new-born infant on whom he operated by the perineal route to correct this malformation. He did not attempt to suture the gap left in the bladder and in the rectum. The raw surface of the rectum closed the small hole in the bladder, and it healed spontaneously.

Urethroperineal Urine Fistulas.—The experience and observation of Fonseca of Rio de Janeiro have convinced him, he says, that when a stricture of the male urethra is a factor in a urine abscess or cooperitis, almost invariably it heals without a persisting fistula. Under other conditions a long persisting and often permanent fistula is the rule. This is the rule also in all cases of whatever origin when the lesion breaks through the skin, either spontaneously or from inadequate intervention, or acute gonorrhea, that has not been properly treated. He describes a group of thirteen cases which show the different outlook in the stricture and the infection cases. They impress the necessity for radical measures from the start, partial resection of the urethra, in all infected cases outside of acute gonorrhea, when the diagnosis is once made, instead of wasting time and efforts on curetting, cauterization, etc.

Presse Médicale, Paris

June 10, 1922, **30**, No. 46

*Prophylaxis of Measles. P. Nobécourt and J. Paraf.—p. 497.
*Radium Treatment of the Esophagus. R. Bensaude and P. Hillemand. —p. 498.
Influenza Bacillus in Influenza. S. Livierato.—p. 500.
Anticoagulants. J. P. Langlois and L. Binet.—p. 501.

Serum in Prophylaxis of Measles.—Nobécourt relates that none of the twenty children inoculated with convalescents' serum within six days of the exposure to measles developed the disease, while all the controls did. The serum was taken from two adults and one child, between the eighteenth and the twenty-second days after the onset of typical measles.

Thread Guide for Radium Treatment of the Esophagus.—Bensaude and Hillemand apply the Sippy thread method for radium treatment of the esophagus, as they describe with illustrations. Under the radium the esophagus became permeable and the bleeding and the fetid secretion from the cancer were arrested. The patient gains in weight and feels as if he were cured. Survivals of two, three and even four years (Guisez) have been known, and Holz claims a complete cure in one case. The guiding thread does away with fear of the radium catheter going astray or perforating the wall.

July 1, 1922, **30**, No. 52

*Blood Test of Liver Functioning. P. Emile-Weil et al.—p. 553.
*Gangrene from Carbon Monoxid Poisoning. A. Girault and A. Richard. —p. 556.
Phenobarbital in Treatment of Epilepsy. J. Mirc.—p. 557.
Danger of Camphor by the Vein. L. Cheinisse.—p. 558.

Blood Test of Liver Disease.—Whenever the liver is seriously pathologic the blood is profoundly altered, and coagulation does not occur as in normal conditions. Weil and his co-workers list seven various abnormal features of coagulation as determined in a large number of cases of liver disease. They call this the *syndrome hémocrasique des hépatiques*, and state that it can be estimated by the bleeding time. This is exaggerated and irregular with liver disease, and this is one of the earliest signs of any infection or intoxication modifying liver functioning. The blood coagulates less readily, there is less retraction of the clot, and the clot crumbles or is redissolved—all of which is manifest in the changes in the bleeding time. The curve of repeated bleeding-time tests shows the great spontaneous irregularity, fasting, especially in females, and above all when there is a tendency to hemorrhage. The curve of the bleeding time can be instructively supplemented by determining the fibrinogen content, refraction, and the viscosity of the plasma, but even without these, the bleeding time curve alone will throw light on important functions of the liver hitherto left unexplored in the clinic.

Gangrene Following Carbon Monoxid Poisoning.—The poisoning had been from a charcoal stove, and patches of gangrene developed at points where there had been compression. Another feature of the case was the total retention of urine and feces. The paresis of the bladder allowed the accumulation of urine to such an extent that the diagnosis when the woman entered the hospital had been abdominal tumor. There was also tardy albuminuria. The slowness with which these disturbances developed and the long delay before they righted themselves, confirmed the serious damage from the protracted anoxemia.

Progrès Médical, Paris

June 24, 1922, **37**, No. 25

*Exophthalmic Goiter Syndrome. C. Achard.—p. 289. Cone'n. Radiotherapy and Radium Therapy. R. Proust.—p. 292.

Exophthalmic Goiter Syndrome.—This is the last of a series of articles by Achard. In conclusion he states that we must distinguish between the mild form and the grave form of exophthalmic goiter. Mild forms must be treated by physical and mental hygiene, and by climatotherapy, hydrotherapy, electrotherapy, and simple medication applicable to subjective disorders and the general condition. Grave forms require a more active treatment. Radiotherapy is valuable for soft goiter or goiter of recent appearance. If it fails, surgery is indicated, and an operation in stages, ligature of arteries combined with thyroidectomy, entails the least risk. The treatment of the cause of the disease should be considered. Syphilis may be incriminated, and we must always look for it and treat it if suspected. Sometimes tuberculous thyroiditis or acute rheumatism may be the cause of the exophthalmic goiter. The latter is a combination of symptoms, a syndrome, rather than a true disease, that is, traceable to a special cause. We must distinguish between the symptoms belonging directly to the exophthalmic syndrome, and associated disorders not directly due to it. Glycolytic insufficiency is one of the latter. When it is found with the exophthalmic goiter syndrome, it is connected with its ordinary causes, and has no more connection with the hyperthyroidism than it has with hypothyroidism when noted in myxedema. The same may be said of other endocrine disturbances which may be found more or less frequently with exophthalmic goiter.

Revue de Médecine, Paris

May, 1922, **39**, No. 5

Anemia and Malaria. J. Rieux and G. Delater.—p. 257.
*Neuralgia of Abdominal Walls. W. Janowski.—p. 269.
Nonprotein Nitrogen in Chronic Uremic Nephritis. P. Siguret.—p. 289.
*Biologic Thought in France. R.Mourgue.—p. 296.
Present Status of Tuberculosis. H. Godlewski.—p. 311.

Neuralgia of the Abdominal Walls.—Janowski published in 1906 a study of intercostal neuralgia based on 440 cases. His experience later has confirmed the remarkable way in which intercostal neuralgia may simulate many affections of internal organs. He here presents a similar study of neuralgia in the abdominal wall, and the number of internal affections which it may simulate is even more imposing and puzzling. He reviews the whole list, and relates many cases of what seemed to be grave organic disease of long standing cured by measures to relieve the neuralgia, blisters to the four or five tender points. These painful points vary in location; they may be on the anterior or posterior axillary line when simulating gallstone mischief. The abdominal wall was sensitive in his 10 cases simulating stomach disease, and the tender points were remote from the stomach. The nausea and vomiting in 2 of the cases came on while the women were dressing, fasting. In 7 in this group, pressure on these tender points induced salivation. In 12 cases there had been pains and pyrosis for months. All were cured with a cantharides plaster (mouche de Milan) applied to the tender points. In 8 cases the pains seemed to indicate a floating kidney. In these cases the painful points were on the mammary line, two or three fingerbreadths above the umbilicus, or in the eighth or ninth intercostal space. In 6 cases kidney stones had been diagnosed; the painful points were on the mammary line above the umbilicus and on the anterior axillary line. The skin of the abdomen should be taken up in folds from the costal arch across the epigastrium, to detect any extra tenderness. This shows that the painful points are in the skin alone, the muscles, etc., responding with normal sensations on palpation. The cure of the painful points under a blister may be followed by the disappearance of symptoms which have been masquerading as chronic parametritis, appendicitis, enteritis, etc. He advises to palpate folds of the skin of the abdomen whenever any patient complains of pains and says that the abdominal wall is itself extremely tender. The neuralgia of the wall may accompany actual disease of organs, but great relief is realized by curing the neuralgia and thus reducing the clinical picture to this extent.

Currents of Biologic Thought in France.—Mourgue's historical sketch refers to the beginning of the nineteenth century. He quotes in particular R. d'Amador's views on system in medicine.

Schweizerische medizinische Wochenschrift, Basel

July 6, 1922, **52**, No. 27

Experimental Rotation Tests of Semicircular Canals. F. Rohrer.—p. 669.
Cocain: History and Clinical Import. P. Wolfer.—p. 674.
*Indications for Treatment of Myomas. W. Fürst.—p. 679.
Roentgen Ray Table. A. Steinegger.—p. 682.

Treatment of Uterine Myomas.—Fürst emphasizes that women must be reexamined after radiotherapy of uterine myomas. Especially those who have not had microscopic

examination of the growths. Radiotherapy should be reserved for the tumors which it can probably cure completely. To decide this may require dilatation of the cervix, palpation of the uterine cavity, and microscopic revision of the mucosa, or prolonged observation of the course.

July 13, 1922, **52**, No. 28

Sanatoriums and Droplet Infection. C. Flügge.—p. 689.
*Biologic Activators. K. Kottmann.—p. 695.
Cultivation of Tissue in the Test Tube. Busse.—p. 701.
Pituitary Treatment of Dwarf Growth. E. Bleuler.—p. 703.
Bismuth Treatment of Syphilis. P. Wolfer.—p. 703.

Biologic Activators.—Kottmann's photoserologic test is made with a colloidal silver salt in the serum. This is exposed to the light and a photographic developer added. The serum then turns brown, as if it had been "developed" like a photograph. The serum responds to the test differently when it has been previously treated with organ tissue, and especially with tissue from a cancerous organ. The change in tint is notably retarded. A similar difference was evident between serum from normal persons and those with cancer. Vegetable tissue has a similar retarding action. He reasoned that there must be some substance in all these tissues that modifies the colloidal state of the serum. The amounts required are minimal, and his research indicates that the substance in question is a kind of vitamin. Cod liver oil has the same activating action. These biologic activators or vitamins may be of endogenous or exogenous origin. They can be recognized by their retarding action on the photoserologic test response, as well as by MacCollum's feeding tests and Glanzmann's experiments on animals. Kottmann remarks in conclusion that we also have to reckon with antivitamins, which act as moderators and maintain the balance.

Policlinico, Rome

June 5, 1922, **29**, No. 23

*Quinidin in Auricular Fibrillation. A. Sabastiani.—p. 741.
*Surgical Treatment of Epithelioma on Hand. A. Manna.—p. 753.
Rancid Butter. A. Filippini.—p. 755.

Quinidin in Auricular Fibrillation.—Sebastiani treated ten patients with auricular fibrillation with quinidin, after digitalis had helped to restore compensation, and in six of the patients normal rhythm was restored. In the four others the fibrillation changed to flutter. One patient had a return of the fibrillation on two occasions, but each time it yielded promptly on resumption of the quinidin. One man of 58 had flutter supersede the fibrillation the second day, but the third day the rhythm became normal. At the same time as this happened, left hemiplegia suddenly developed. Evidently some small clot was dislodged as the auricle began to beat normally, and it was swept into some vessel in the brain. The hemiplegia began to improve the same day, and by the end of the week nothing was left of it but a slight facial paresis. The heart beat is still normal and the man feels well.

Epithelioma on Hand.—The cancer in Manna's case embraced the thumb and adjacent back of the hand, and the glands in the axilla and above the elbow were already involved. He removed these glands before attacking the primary tumor four days later. It is his routine practice to operate on the cancerous glands first. This prevents further metastasis, and the patient may not consent to an operation on the metastases after the primary growth is once removed. The tumor had been stationary for four years as an apparently harmless, very small lump, but then it was excised. The reddish scar then gradually grew larger, and at the sixth month it was cauterized with some chemical, probably sulphuric acid, applied every second day for a month. From the first application of the caustic the glands swelled and the tumor ulcerated. It continued to proliferate rapidly and was soon a large cancer.

June 12, 1922, **29**, No. 24

Chronic Constipation from Surgical Standpoint. M. Bufalini and C. Romiti.—p. 773.
Rat-Bite Fever in Woman. A. Ruggiero.—p. 781.
Autoserotherapy in Pulmonary Tuberculosis. G. Ferrari.—p. 786.

June 15, 1922, 29, Surgical Section No. 6

*Telangiectatic Pedunculated Granuloma. G. Anzilotti.—p. 301.
*Repeated Spinal Anesthesia in Same Subject. I. di Pace.—p. 311.
Fibroma of Ear. T. Laurenti.—p. 330.
*Surgery of Papilla of Vater. O. Tenani.—p. 333. Conc'n.
Present Status of Renal Tuberculosis. R. Alessandri.—p. 348. Conc'n.

Pseudobotryomycosis.—Anzilotti has encountered fifteen cases of what seemed to be botryomycosis, but it proved to be merely pedunculated granulomas with a tendency to telangiectasis. The tumor was on the hand, lip, chin, tongue or scalp, and some scratch or bite or other injury had preceded its development in all but one case. There has been no recurrence in any instance since the extirpation of the tumors.

Repeated Spinal Anesthesia.—The five cases reported by Di Pace seem to establish that when an attempt to induce spinal anesthesia has failed on account of the subject's lack of receptivity, the anesthesia will run the same course on another occasion, if the attempt is made again after an interval of days, weeks or years. Whatever the course the first time, the repetition will duplicate it.

Surgery of the Papilla of Vater.—Tenani summarizes briefly 14 cases of papillectomy on record and 11 of papillectomy plus resection of the duodenum. Only 4 durable cures were realized in the two groups. He reviews other operations involving the duodenum and pancreas, and discusses the management of the stump of the pancreas. Its secretion has to be given an outlet; in a personal case, after a preliminary gastro-enterostomy, he sutured the stump of the pancreas to open into the intestine. Kausch has also reported a case in which this method was applied. The bile duct and the pancreatic duct were both implanted in the duodenum, but separately. Tenani's patient was permanently cured, while in Kausch's case obstruction of the bile duct proved fatal the twenty-third month. Necropsy showed that there was no metastasis, and the operation had thus been a success. The aim in operating should be to utilize gravity as much as possible to insure the proper flow of bile, etc., and impede reflux of food into, or ascending infection of the bile passages.

Archivos Españoles de Pediatría, Madrid

April, 1922, **6**, No. 4

*Vaccine Therapy of Whooping Cough. Martin González-Alvarez.—p. 193.
Aortic Insufficiency of Rheumatismal Origin in Children. A. Armand Ugón.—p. 205.
*Autovaccine Treatment of Purulent Urinary Disease in Children. A. R. Lozano.—p. 213.

Vaccine Therapy of Whooping Cough.—The vaccine used in the *269* cases was Ferrán's antialfa vaccine. In the last series of *242* cases, *75* were cured, *69* improved; no effect was apparent in 50, and the vaccine was suspended in 8 as complications had developed. From three to five injections were made in three or five days, and the cure was complete in about two weeks as a rule.

Vaccine Therapy in Purulent Urinary Disease in Children.—Lozano calls attention to the prompt cure in five new cases of pyelonephritis or pyelocystitis. All were cured except one child whose pyelocystitis was of several months' standing. The age ranged from 4 months to 12 years. He says that the routine practice should be urinary antiseptics first, followed systematically with the autogenous vaccine, with or without further use of the chemical antiseptics.

Prensa Médica Argentina, Buenos Aires

June 10, 1922, **9**, No. 1

*Sequelae of Epidemic Encephalitis. G. Aráoz Alfaro.—p. 1.
*Reflex Cardiospasm from Gallstones. C. Bonorino Udaondo and Onofre Catalano.—p. 6.
*Progressive Toxic Deafness. E. V. Segura.—p. 8.
*Recklinghausen's Disease. Mamerto Acuña and F. Bazán.—p. 12.
Formula for Healing of Wounds. G. Bosch Arana.—p. 19.
Serum Refractometry in the Pregnant. S. Mazza and D. Iracta.—p. 24.
The Hemoclastic Crisis in Children. F. Bazán.—p. 26. Cont'd.
Syphilis and the Cerebrospinal Fluid. Nonne.—p. 33. Cont'd.

Sequelae of Epidemic Encephalitis.—In one of Aráoz Alfaro's three cases the parkinsonism and clonic spasms are rather the prolongation of the disease than sequelae. In the child of 10 the mind has become impaired, in addition to the motor symptoms. This patient presents surprising facility in certain rapid, vigorous movements; this contrasts remarkably with the parkinsonian rigidity and motor amnesia at all other times. In the two adults there is a tendency to catatonia besides the parkinsonian rigidity and intentional tremor. The condition seemed to be improving in the second year but since has grown progressively worse.

Reflex Cardiospasm.—The man of 36 had had two attacks of gallstone colic within a few years, but was otherwise well until early in 1920 when transient cardiospasm kept returning. This intermittent and progressive cardiospasm persisted for several months, with other signs of vagotonia. A return of the gallstone colic compelled cholecystectomy, after which there was no further tendency to cardiospasm. Buettner has reported a case in which, along with spasm of the pylorus and middle of the stomach, there was occasional cardiospasm. These visceral or general reflex reactions to cholelithiasis seem to be more common in subjects with thyroid deficiency, but the endocrine derangement is liable to mask the causal disease. In the present case there were no signs of endocrine disturbance.

Toxic Deafness.—Segura remarks that any and every intoxication to which the organism is liable may induce progressive deafness, and may entail any kind of pathologic anatomic changes. In certain persons and families the ear seems more vulnerable than in others, and we should be on the alert to ward off damage from toxic injury of any kind. He is confident that much more than is generally supposed can be accomplished by wise guidance of the predisposed, with exercises to train and improve the hearing, and treatment with radioactive waters or radium salts to stimulate metabolism in general and the emunctories. He adds that progressive deafness is growing more and more frequent every day, and he ascribes this to the influence of modern civilized life with its sluggish elimination of waste.

Recklinghausen's Disease.—The girl of 12 with inherited syphilis presented the complete form of Recklinghausen's disease; the boy of 11 had only the spots on the skin and the typical apathy and backward mental development of the disease, unable to remember his own name.

Revista Médica del Uruguay, Montevideo

June, 1922, **25**, No. 6

*Masked Peritonitis. A. Canzani.—p. 473.
*Normal Plus Ectopic Pregnancy. C. P. Colistro.—p. 476.
Case of Appendicitis. R. M. del Campo.—p. 482.
*Syphilis of the Tonsil. J. May.—p. 485.

Masked Peritonitis.—In the four obstetric cases described by Canzani, the women died with nothing to suggest peritonitis, but necropsy revealed purulent peritonitis. Since these experiences, he makes a point of puncturing the pouch of Douglas at the slightest suspicion of trouble. Capillary puncture is entirely harmless, but it discloses any tendency to peritonitis. Although the knowledge of the peritonitis in these cases could not have averted the fatal outcome, in some conditions active treatment might prove effectual.

Simultaneous Normal and Extra-Uterine Pregnancy.—Colistro remarks that in thirty-five of seventy-three cases of this dual pregnancy, the uterine pregnancy continued to term unmodified by the laparotomy required for the ectopic. In two personally observed cases, uterine abortion had occurred at the second or third month, and the continuance of hemorrhage and other symptoms was explained by the laparotomy disclosing the tubal gestation. In one woman the right tube was involved although the pains had been in the left side. She had lost much blood at the uterine abortion, and she died soon after the laparotomy. The other extra-uterine pregnancy was suspected from the signs of internal hemorrhage although only a few days had elapsed since the uterine abortion. In another case a fibroma in the pregnant uterus had been diagnosed, but the operation showed merely that the ovum was embedded in one angle of the organ.

Syphilis of the Tonsil.—May relates that the man's "sore throat" had been ascribed to diphtheria and been given antitoxin treatment. No effect was apparent, and May differentiated syphilitic disease of the tonsil by the yellowish aspect and swelling, the pains in ankles and elbows, especially at night, the acute impairment in hearing, the swollen glands in the neck, and slight difficulty in breathing and swallowing. The lesion on one tonsil was evidently the primary sore; on the other tonsil, a secondary lesion. The pains in the bones subsided at once under specific treatment, and the tonsils cleared up promptly. In a total of 2,771 cases of syphilis in Foresti's service, the tonsils were the seat of the primary lesion in 11; in a later series of 1,885 cases, only in 3, including the one here described, and 3 other cases in private practice. He ascribes the infection to drinking glasses, as cases of eruptive syphilis were found in the environment.

Archiv für Kinderheilkunde, Stuttgart

July 1, 1922, **71**, No. 3

*Abscess-Forming Pneumonia in Infants. E. Nassau.—p. 161.
*Own Urine Test for Tuberculosis. A. Andreasch.—p. 169.
*Postdiphtheric Paralysis. H. Hünerberger.—p. 175.
*Prevalence of Tuberculosis in Children. K. Barchetti.—p. 180.
Experimental Research on Vitamin Free Diets. E. Weitbrecht.—p. 192.
The Age Incidence of Appendicitis. E. Schlossmann.—p. 208.

Abscess-Forming Pneumonia in Infants.—Nassau describes an epidemic of a rapidly fatal form of bronchopneumonia in thirteen artificially fed young infants in an institution. It was distinguished by the necropsy finding of cavities, from the size of a pinhead to that of a bean, scattered through the lungs. The negative bacteriologic findings and the appearance of the cases when influenza was not prevailing seem to exclude influenza, although in certain respects the disease recalls the grave influenza pneumonia of adults. The epidemic was followed by some cases of a fatal enteritis, with a long course suggesting typhoid, with lung manifestations. The broncho-enterocatarrh was generally fatal in the artificially fed.

Own Urine Reaction.—Andreasch found the Wildbolz test frequently but not always positive in active tuberculosis.

Postdiphtheric Paralysis.—In one of the two children described, the paresis of the right pterygoid muscle caused distortion of the lower jaw when the mouth was opened. The second and third branches of the trigeminal nerve had borne the brunt of the diphtheria toxin but they gradually recuperated. In the second child, the toxic action was pronounced in the muscles of the neck and back. The head could not be held up long, and the child could not raise himself when reclining. The extensive paralysis suggests acute poliomyelitis rather than diphtheria, but there is nothing otherwise to sustain this assumption, while the child had had mild diphtheria four weeks before.

Frequency of Tuberculosis in Children.—Barchetti reports systematic examination of children at Graz, a city of 150,000 inhabitants. The proportion responding positively to tuberculin tests was much smaller than in Vienna. The tuberculosis death rate in adults is also lower in Graz.

Archiv für klinische Chirurgie, Berlin

June 16, 1922, **120**, No. 1

*Cancer in the Rectum. E. E. Pribram.—p. 1.
Appendicitis Statistics. E. Seifert and E. Augustin.—p. 35.
Etiology of Ischemic Contracture. O. Beck.—p. 61.
*Decapsulation of Kidney. V. Hoffmann.—p. 84.
Inflammation Studied in the Capillaries. G. Magnus.—p. 96.
*Recurrence of Gastric Ulcer. H. Finsterer.—p. 111.
*Gastric Juice as Antiseptic. L. Schönbauer.—p. 125.
Case of Gas Cysts in Intestines. F. Schulte.—p. 138.
*Mediastinal Tumors. Sorge.—p. 150.
Transplantation of Skin Flaps. N. Takahashi and R. Miyata.—p. 170.

Cancer of the Rectum.—Pribram analyzes the ultimate outcome in 320 cases of rectal cancer. A radical operation was undertaken only in 43.4 per cent. Many of the patients related that they had been long treated for hemorrhoids, rectal fissure or intestinal catarrh before the nature of the disease had been recognized. In 3.5 per cent. a parent or brother or sister had died of cancer, and in 24 cases there had been preceding hemorrhoids, and in 9 other cases a fissure or fistula or polyps. Metastasis was common, mostly in liver (22 cases), mesentery (10), lungs (6), peritoneum, small intestine and sacrum (3 each), and glands (48). Of the 118 operated on before 1919, 22.8 per cent. have been permanently cured for three years. Omitting the operative fatalities, the proportion is 33.3 per cent. permanently cured. All types of cancer were represented in this cured group. The best ultimate outcome was realized with the Hochenegg method of drawing out the rectum; next to this, with resection and circular suture, and Rotter's flap plastic reenforcing

of the suture. Colostomy allowed survival for several years in some of the inoperable cases; in others it improved conditions so that a radical operation could be undertaken. The combined abdominal-sacral method has the two grave dangers of operative shock and infection of the pelvic peritoneum. The latter may entail capillary thrombosis with slow necrosis of the bowel. A plastic operation with muscle to reconstruct the sphincter seldom succeeds; the use of a rubber ring, as Matti suggests, is better. Five pages of bibliography, titles set solid, are appended.

Experimental Study of Decapsulation of the Kidney.—Hoffmann's research on cats and rabbits demonstrated in every instance unmistakable benefit from the decapsulation after acute injuries of the kidneys. His colored plate shows the marked difference in favor of the decapsulated kidney after ligation of both ureters, for example.

Prophylaxis of Postoperative Peptic Ulcer.—Finsterer describes a number of cases which apparently sustain his claim that the best way to ward off postoperative peptic ulcers is by resecting as much as possible of the secreting surface of the stomach, removing 75 to 80 per cent. of the stomach. In two of his cases peptic ulcer developed notwithstanding resection of the pylorus and duodenum and the old ulcer. These patients were men in the forties, brothers, and both have been cured since the stomach was extensively resected, leaving only about a fifth of the organ.

Gastric Juice as an Antiseptic.—Schönbauer ascribes to the antiseptic action of the hydrochloric acid and pepsin the fact that while 70 per cent. died of his thirteen operative cases of perforation of a duodenal ulcer, only 19 per cent. died of the sixteen cases of perforated gastric ulcer. On these premises he experimented with dogs, injecting them with hydrochloric acid and pepsin after peritonitis had been induced. This is a physiologic antiseptic, and it does no harm when injected into the peritoneum or joints. No adhesions formed in up to two months in any of the animals. It was used in four clinical cases of peritonitis from perforation and in a case of empyema of the knee, with extremely good results. The proportions were 4.5 gm. of diluted hydrochloric acid and 1 gm. of synthetic pepsin (digesting power of 1:3,000), in 1,500 c.c. of distilled water. None of the dogs thus treated died, while all died that were treated with 3 per cent. hydrochloric acid alone or saline.

Mediastinal Tumor.—The symptoms from the large sarcoma in the upper mediastinum had puzzling periods of remission, during which the young man felt relieved from all his disturbances for the time being. Arsphenamin also displayed great efficacy in improving the condition temporarily. This drug seemed to soften up and destroy the older cells of the tumor and it melted down, materially relieving the symptoms. The younger cells, on the other hand, seemed to be stimulated to more rapid growth, as was evident in the early increase in size. Inoperable mediastinal tumors should therefore be treated with arsphenamin and roentgen exposures.

Beiträge zur klinischen Chirurgie, Tübingen

1922, **126**, No. 1. Kümmell Festschrift. First Half

*Angiospastic Conditions. J. Wieting.—p. 1.
Peptic Jejunal Ulcer After Gastro-Enterostomy. H. Brütt.—p. 41.
Acquired Syphilis of the Small Intestine. R. Schmidt.—p. 61.
Nine Thousand Appendicectomies. Marsch.—p. 67.
Tardy Hemorrhage After Appendicectomy. H. Mertens.—p. 80.
*Splenectomy with Cirrhosis of Liver: Two Cases. E. Birt.—p. 83.
Cancer of Bile Ducts and Papilla of Vater. H. Brütt.—p. 90.
Pseudorecurrence After Gallstone Operations. Treplin.—p. 108.
Acute Hemorrhagic Necrosis of Pancreas. K. P. Müller.—p. 113.
Correction of Urethral Defect by Ekehorn's Method. Sudeck.—p. 130.
*Fate of Joint Transplants in Fingers. F. Ochlecker.—p. 135.
*Bone and Joint Tuberculosis. A. Blencke.—p. 182.
*The Latest Treatment of Surgical Tuberculosis. H. Kümmell, Jr., and R. Paschen.—p. 206.

Spasm and Paralysis of Blood Vessels.—Wieting explains how the functioning of the blood vessels is highly independent. It is subject only to the vegetative nervous system, as this feels the effect of the suprarenal hormone which controls the giving off of carbon dioxid in the venous blood after receiving the oxygen in the arterial blood. This is a kind of respiration in the tissues, and it is synchronous with the heart vessel rhythm. He discusses the whole field of spastic and paralytic conditions in the vessels from exogenous or endogenous irritation or of mental origin, as in fright and joy. The segmental or the general reaction to the constricting or dilating influence varies in intensity in certain persons. It may amount to an actual angiospastic diathesis. Treatment differs according as the disturbances are the result of constriction or dilatation of the vessels of this or that region, and as the irritation comes from within or without. It is possible that we might influence this angiospastic diathesis (which includes Raynaud's disease, angina pectoris, intermittent claudication, angina abdominis, etc.) by removing a suprarenal, just as we remove part of the thyroid in treatment of exophthalmic goiter. By reducing the amount of functioning suprarenal tissue, we would reduce the tonus of the blood vessels, and thus might do away with the predisposition to spasmodic contraction, the spasmophilia. The opposite condition, tonus deficiency (which seems to be a factor in melancholia, etc.) should be combated by means to compensate the insufficient endocrine functioning, giving epinephrin or pituitary extract, etc., or by gland implants. He does not know of any attempt in this line to date. In acute disturbances, as after freezing, gymnastic exercises of the vessels, with alternating hot and cold baths, strengthen the musculature of the vessels and smooth the pathways for the regulating impulses, and clear away obstacles. Vasomotor paralysis, on the other hand, in an acute form is an important element in all collapse conditions.

Splenectomy with Cirrhosis of Liver.—In Birt's two cases the ascites and enlarged liver justified the operation, and the outcome was favorable in one of the two women. In the other the ascites returned. It might have been better to have supplemented the splenectomy with omentopexy, but he did not dare to attempt it as severe hemorrhage followed each introduction of the needle.

Joint Implants in the Fingers.—Ochlecker reports the present outcome in 8 cases in which an entire joint was transplanted into a finger over six years ago. In 4 cases the joint was taken from the patient himself; in the others from another person. The results are better in the autoplastic cases, and can be regarded as ideal in one case in which the whole joint and two half joints were transplanted from the second toe into the left little finger of a boy of 12. Several enchondromas had been removed from his fingers, and as he had a talent for piano playing, his parents wanted a usable little finger. The joints of the second toe are peculiarly adapted for transplanting whole joints in this way. A partial homoplastic joint transplant is also liable to prove a success for the basal joint. The operations on the middle joint gave only mediocre results. In 3 cases he transplanted the pedunculated big toe in place of the thumb, but the attempt had to be abandoned in one case as the patient could not stand the discomfort. He used the toe on the same side but Müller advises the opposite side as more convenient. He compares his 3 cases with 9 from the literature, and illustrates another case in which the big toe was grafted on the stump of the left wrist after the hand had been blown off by an explosion. To make a claw hand out of the round stump, a segment of the radius was resected, and the toe was sutured to the shortened radius. He also illustrates a very successful case of reconstruction of nearly the entire face after a shell wound. The reconstruction was done with pieces from the man's own tibia, ribs and scapula, besides homoplastic material, including a big toe, two finger phalanges, and an ear and a lipoma. The attempts at free transplantation of epiphysial cartilage, as done by himself and others, never proved successful. But good results have been obtained with pedunculated flaps of the kind.

Treatment of Bone and Joint Tuberculosis.—Blencke declares that time and experience are convincing him more and more that nothing but an earlier diagnosis and early specialist orthopedic treatment will improve the statistics of bone and joint tuberculosis. The fine results obtained from heliotherapy alone in certain cases probably cannot be dupli-

cated by the general practitioner. Two cases are described to show the dire results of trusting to the practitioner's treatment with sunlight, roentgenization and passive hyperemia. Only when the children were immobilized in plaster and kept out of doors all the time did they begin to improve. His article is based on his impressions with 1,439 cases of bone and joint tuberculosis. Kümmell and Paschen emphasize the importance of institutional treatment, as outpatients do not thrive in comparison with the children who are given systematic sanatorium treatment with immobilization.

Deutsche medizinische Wochenschrift, Berlin

June 9, 1922, **48**, No. 23

Prevention of Childbed Fever. Zweifel.—p. 759.
*Irradiation of Carcinoma of Cervix Uteri. E. Zweifel.—p. 762.
Etiology of Psoriasis. Bettmann.—p. 762.
Atypical Cases of Purulent Peritonitis. V. Schilling.—p. 764.
Body Temperature and Sleep. P. Lindig.—p. 765.
Arsphenamin Dermatitis. W. Heyn.—p. 767.
*Alimentary Hyperglycemia and Glycosuria. G. Hetényi.—p. 770.
Early Diagnosis of Gastrocolic Fistula. H. Arons.—p. 771.
Serotherapy in Primary and Secondary Anemia. Wetterer.—p. 772.
Roentgenologic Progress with the "Radio-Silex" Apparatus. H. Schoen.—p. 773.
Causal Morphology and Practical Medicine. G. Ettisch.—p. 773. Conc'n.
Treatment of Gynecologic Secretory Disturbances. Freund.—p. 776.

Results of Roentgen Irradiation in Carcinoma of the Cervix Uteri.—Zweifel reports that of 43 patients of the first and most favorable group, who took the full course of treatment, 35, or 81 per cent., were cured (no recurrence inside of five years). Of 50 such cases of the second group, 18, or 36 per cent., were cured, and of 121 of the third group, 13, or 10.4 per cent. One patient of the fourth group was cured. Since 1917 he has combined mesothorium irradiation regularly with roentgen irradiation, and so far the results are favorable.

Alimentary Hyperglycemia and Glycosuria. — Hetényi found that peroral ingestion of 100 gm. of dextrose causes also in healthy persons an increase of blood sugar, but in the various diseases of the liver the increase is much more marked. A slight increase of blood sugar (below 40 per cent.) is strong evidence against the presence of an affection of the liver. In the genesis of alimentary glycosuria the condition of the kidneys is of great importance.

Jahrbuch für Kinderheilkunde, Berlin

July, 1922, **99**, No. 1

*Research on Infants' Blood. P. György.—p. 1.
*Tuberculosis of Child Kidney. H. Eliasberg.—p. 13.
*Diabetes in an Infant. R. Kochmann.—p. 20.
*Growth Pallor. K. Benjamin.—p. 28.
*Absorption of Epinephrin. R. Cahn and B. Steiner.—p. 44.

Research on Infants' Blood.—György tabulates the calcium and the inorganic phosphorus content of the blood serum in groups of twelve and thirteen infants.

Tuberculosis of the Kidney in Children.—Eliasberg has encountered five cases in the last three years, and emphasizes the importance of the differential diagnosis. The prospect of a cure depends upon this more than with almost any other affection. All the children presented chronic pyuria, but no bacilli were found with the ordinary methylene blue stain. Inoculation of animals is the only means for detection of the tuberculosis with this abacterial pyuria. Hematuria was frequent; with colon bacillus pyuria, hematuria is rare. Cystoscopy and catheterization of the ureters, with tubercle bacilli in the urine, are decisive. Three of the five children were in good general condition. Two died from tuberculous meningitis after the successful nephrectomy, and a third from the rapid spread of the disease to the other kidney and lungs. Nephrectomy is the proper treatment. When done early enough the outlook is good.

Diabetes in an Infant.—Kochmann states that there was no history of diabetes or syphilis in the family, but the infant of 4½ months had from 5 to 9 per cent. glucose in the urine. It was artificially fed and was always hungry, but did not seem to have any digestive disturbances although taking up to 2 liters of food daily, with two tablespoonfuls of lactose at each feeding. By reducing the intake of sugar, the glycosuria dropped to traces, but the child declined visibly. It improved anew when whole milk was given, as also on oatmeal gruel. On malt extract the glycosuria ran up to 28.9 gm. in the twenty-four hour urine. The child succumbed to intercurrent pneumonia before it was 8 months old, the blood sugar running up at last to 0.3 to 0.44 per cent., with extreme acetonuria. The mother had had two severe falls during her pregnancy, and in the literature on diabetes, trauma is often mentioned as of etiologic importance. The case reaffirms the advantage of oatmeal as the best source for carbohydrates; lactose can be avoided by the use of buttermilk. Fat in the butter-flour mixture seems to be well borne as long as there is no danger of acidosis. When no carbohydrates were given, the general condition grew worse, confirming that the intermediate metabolism requires sugar, and in the lack of a proper supply, the body forms it from its own tissues.

Growth Pallor.—Benjamin refers to the pseudo-anemia of school children, the consequence of overexcitability of the vasomotor nervous system.

Absorption of Epinephrin.—Cahn and Steiner examined the blood for hyperglycemia before and after subcutaneous injection of epinephrin. They assume that hyperglycemia afterward testifies that the epinephrin has been absorbed. This was found to be constantly the case, even when there was no rise in blood pressure from the epinephrin.

Klinische Wochenschrift, Berlin

April 15, 1922, **1**, No. 16

Testing Wound Antiseptics with Animals. H. Braun.—p. 761.
Biologic Effect of Roentgen Rays. H. Holthusen.—p. 766.
*Extirpation of the Spleen. P. Morawitz.—p. 769.
Chronic Traumatic Inflammations of the Knee Joint. Rost.—p. 772.
An Ideal Aneurysm Operation. E. Rehn.—p. 776.
Primary Wound Closure, Especially in Pleural Empyema. Fischer.—p. 778.
Otogenous Brain Abscess in Left Temporal Lobe. A. Esch.—p. 781.
*Pain Due to Os Tibiale Externum. S. Peltesohn.—p. 783.
Effect of Shepherd's Purse on Uterus. Wiechowski and Halphen.—p. 786.
The Living Organism of Cold-Blooded Animals As an Indicator of Colloidal Changes. H. Molitor and E. P. Pick.—p. 787.
Scapula Snapping Sound. O. Heinemann.—p. 787.
Practical Results of Wound Antisepsis. W. v. Gaza.—p. 788.
Dispensary for Cases of Surgical Tuberculosis. Kisch.—p. 791.
Transplantation of Tissues. W. Schulze.—p. 793.

Indications for Splenectomy.—Morawitz brings out that more extensive research on the functions of the spleen and the relationship of the spleen to other organs is needed; also a more accurate diagnosis of chronic tumors of the spleen, and a clearer knowledge of the diseases in which extirpation of the spleen may be indicated before more precise indications for such operation will be possible. He emphasizes that we have in the past regarded the spleen too much from the passive side; it has been looked upon as a mechanical filter inserted in the blood stream. Recent researches, however, have shown that the spleen is a hemolytic organ which probably brings about certain changes in the blood elements, instead of being a mere dumping ground for waste blood products. When we see that in hemolytic icterus the enlarged spleen is crowded with erythrocytes in all stages of disintegration; when we observe further that this exaggerated hemolysis is arrested by splenectomy, we can scarcely refuse to believe in the hemolytic action of this organ. Hormonal functions of the spleen may also play a certain rôle. Owing to the rather high mortality resulting from extirpation of the spleen in pernicious anemia we hesitate to advise such intervention, which, at the best, only promises a remission of a few years. Morawitz recommends it only when all other therapeutic remedies have been tried and it seems evident that the hemolysis in the spleen is an important factor in the disease; for instance, when the spleen is distinctly palpable. Eppinger, however, attaches no importance to the enlargement of the spleen as an indication for operation. We cannot expect much from extirpation of the spleen in leukemia and in erythremia; in the latter disease we have in roentgen irradiation an effective method of treatment. In the hypertrophic form of cirrhosis of the liver, extirpation of the spleen has been tried (Eppinger). The icterus retrogressed, and the liver became smaller, but no permanent results have been vouched for in such cases as yet.

The Occurrence and Significance of Os Tibiale Externum in Relation to Pains in the Foot.—Peltesohn states that in the foot of adolescents (as a rule, in the first half of the second decade) pains frequently occur which are associated with an inconstant os tibiale externum. If in the case of pes valgus (not pes planus) in a young person we find a marked protuberance of the navicular bone, which is painful on pressure or even spontaneously, and if a distortion of the foot has occurred, it is probable that there is an os tibiale externum, which can doubtless be diagnosed even without a roentgenographic examination. In recent cases the pain will subside on application of adhesive-plaster bandages holding the foot in supination, with the use of a special insole. In older cases the insoles will usually suffice. The insoles must be adjusted by an orthopedic specialist. It is quite possible for an os tibiale externum to be the predisposing cause of pes valgus in early years.

Münchener medizinische Wochenschrift, Munich

June 9, 1922, **69**, No. 23

*Medical Theories Concerning the Human Organism. A. Bier.—p. 845.
*Tuberculin Treatment of Bronchial Asthma. W. Storm van Leeuwen and H. Varekamp (Leiden).—p. 849.
Significance of Ovarian Lipoids. F. von Mikulicz-Radecki.—p. 851.
Observations on Six Hundred Operations Performed Under Local Anesthesia. T. Schaps.—p. 854.
Sedimentation Speed of Red Corpuscles in Citrated Blood of Syphilitic Infants. K. Batzold.—p. 857.
Differential Diagnosis of Incipient Tuberculous Spondylitis and Chronic Rheumatism of the Back. P. Pitzen.—p. 858.
Comparative Investigations on Various Tuberculins in Diagnostic Applications. Schall.—p. 859.
Technic of Vaginal Lavage. L. Zill.—p. 860.
Spread of Venereal Disease in Nürnberg. L. Voigt.—p. 861.
The Gastroduodenal Sound. T. Bársony and E. Egan.—p. 863.
Blood Pressure After Application of Artificial Heliotherapy to Children. A. Meyer.—p. 864.
Percutaneous Treatment of Tuberculosis. J. Petruschky.—p. 865.
Art of Embalming One Hundred Years Ago. E. Ebstein.—p. 866.
Differential Diagnosis of Tumors of Breast. A. Krecke.—p. 866.

Medical Theories in Regard to the Human Organism and Life in General; More Particularly, the Mechanistic and the Teleologic Theories.—Bier holds that it does not matter so much if a theory does eventually prove to be unfounded, if it is only fruitful in that it stimulates investigation and furnishes a rallying ground. For example, the darwinian theory was not correct in every particular, but it proved exceedingly fruitful in the field of biology and in the realm of many other sciences. Bier admits that he is a teleologist. In spite of the many attacks against the teleologic theory, down through the ages, it has never been overthrown. Assertions that there are many dysteleologic processes and activities in the organism are being refuted more and more. But above all, and that is the main thing, the teleologic theory has also proved to be exceedingly fruitful of results, and, in view of the inadequacy of the causal theory, was needed to supplement the latter. In general, then, it should be recognized that theories are necessary. They constitute the best means of preparing the way for progress. "He who is inclined to despise them, let him recall that antisepsis, which has proved to be of such eminently practical value, was developed through theoretical meditation. Then, too, was asepsis developed through practice? no, rather through theory."

Tuberculin Treatment of Bronchial Asthma.—Storm van Leeuwen and Varekamp give a preliminary report of the favorable results they have secured by using tuberculin in the treatment of a series of 150 patients with bronchial asthma. They plan to publish a complete report within the next twelve months. An abstract on Pietroforte's tuberculin treatment of asthma will be found in The Journal **75**:1030, 1920.

Finska Läkaresällskapets Handlingar, Helsingfors

May-June, 1922, **64**, No. 5-6

*The Capillaries in Disease of the Blood. E. Hisinger-Jägerskiöld.—p. 245.
*Juvenile Osteochondritis of the Hip Joint. Lennart Ståhle.—p. 244. Case of Hernia on Spigel's Line. T. Sandelin.—p. 268.
*Cutaneous Emphysema with Pulmonary Tuberculosis. G. Becker.—p. 274.
Treatment of Bone and Joint Tuberculosis. G. A. Wetterstrand.—p. 280.

The Capillaries in Pernicious Anemia and Other Blood Diseases.—The capillaries were sometimes found empty and at other times unusually narrow, which well explains the pallor in diseases of the blood. There may be constitutional hypoplasia of the capillaries in addition to their functional insufficiency.

The Calvé-Legg-Perthes Affection of the Hip Joint.—Ståhle describes this condition saying that it has never been encountered in Finland, but Tiisala on page 285 reports a case at Helsingfors.

Cutaneous Emphysema with Pulmonary Tuberculosis.—Becker has been able to find only eighty-one cases of this kind on record, including one published in Finland. In the case personally observed the man had both tuberculous meningitis and two tuberculous cavities in the left lung. The emphysema seemed to start from the right lung, and he ascribes it to rupture of alveoli. The man had been kept under the influence of morphin so there was no violent coughing at the time.

Hospitalstidende, Copenhagen

June 15, 1922, **65**, No. 22

Pathologic Physiology of the Lungs in Heart Disease. C. Lundsgaard and K. Schierbeck.—p. 349. Conc'n in No. 23, p. 365.
Wertheim's Operation; Twenty-Four Cases. E. Lassen.—p. 360.

June 20, 1922, **65**, No. 23

Osteo-Arthritis in Young Woman. H. Jansen.—p. 371.

June 24, 1922, **65**, No. 24

Vestibular Nystagmus. R. Lund.—p. 381. Conc'n No. 25, p. 397.
Experimental Research on Labyrinth Functioning. R. Lund.—p. 387. Cont'd.

Norsk Magazin for Lægevidenskaben, Christiania

July, 1922, **83**, No. 7

Arterial Pulse in Influenza Pneumonia. F. Leegaard.—p. 497.
*Albinism in Man. V. Magnus.—p. 509.
Rupture of Stomach from Contusion. G. Ipsen.—p. 514.
Polydactylia plus Brachydactylia. W. Bjerknes.—p. 517.
*Perforation of Bowel by Fish-Bone. G. Lützow-Holm.—p. 523.
*Pathogenesis of Exophthalmic Goiter. J. Holst.—p. 527.
Evolution of Radiotherapy in Norway. P. Amundsen.—p. 539.

Albinism in Man.—Magnus has succeeded in obtaining records of 174 cases of albinism in Norway. The proportion to the population where they live is 1:9,649. Information in regard to heredity was obtained in 108 cases—a total of fifty families. In his compilation the albinism showed a recessive mendelian character in some instances and a dominant in others. In 13 marriages between cousins, there were 27 albinos among the offspring and 69 normally pigmented. In 2 marriages between uncle and niece, 2 of the 9 children were albinos. In 6 marriages between less close relations, 14 of the 23 children were albinos, and in 35 nonconsanguineous marriages there were 62 albino to 96 normally pigmented children.

Perforation of Intestine by Fish-Bone.—In Holm's three cases the operation had been done on the diagnosis of acute or chronic appendicitis. The hole made by a fish-bone is so small that it may escape detection. An abscess generally forms when there is chronic irritation from the foreign body. In one of his cases, as also in Morton's case, the surgeon's pricking his finger on the fish-bone first explained the case. Normal gastric juice dissolves fish-bones as a rule. If not dissolved, they usually pass through the bowel without harm. He cites only nine cases from the records.

Pathogenesis of Exophthalmic Goiter.—Holst comments on the way in which a primary exophthalmic goiter may keep up an active growth with progressive emaciation of the rest of the body. The parenchyma of this form of goiter seems thus to have a certain independent autonomy. It begins with multiple epithelial tumors which merge into each other until the pathologic condition is diffuse. Cancer of the thyroid sometimes induces fulminating exophthalmic goiter symptoms. He adds that acromegaly, which in many respects resembles exophthalmic goiter most closely, is the result of an epithelial tumor in the organ which resembles the thyroid most, namely, the pituitary body.